The Builder.

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ILLUSTRATIONS.

New Offices of the "Hamburg Amerika Linie".....Mr. Arthur T. Bolton, A.R.I.B.A., Architect.
Hornton Court, Kensington.....Messrs. Chesterton & Coleridge, Architects.
Small Country House near Chorley Wood.....Mr. J. E. Dixon-Spain, A.R.I.B.A., Architect.
Porch of House, Hindhead.....Mr. E. J. May, F.R.I.B.A., Architect.
Sketches.....By Mr. J. W. Hepburn.

1. La Sainte Chapelle, Paris.
2. St. Michael's, Coventry.
3. Norman Porch, Canterbury.
4. West Gate, Canterbury.

Illustrations in Text.

Parenzo and Its Basilica:—
View across the Nave, Parenzo Cathedral... Page 352
Inlay in the Apse, Parenzo Cathedral ..... Page 353
S. Vitale, Ravenna ..... Page 354
Proposed House, Wimpole-street ..... Page 357
Two Entrance Doorways to a School in Halle.
Herr C. Rehorst, Architect ..... Page 363
Illustrations to Student's Column:—
Fig. 9 ..... Page 370
Figs. 10 to 13 ..... Page 371

CONTENTS.

	PAGE
Parenzo and Its Basilica—I.	351
The Patents and Designs Bill	354
Notes	354
Front of Proposed House, Wimpole-street	357
The Royal Institute of British Architects	358
The Carpenters' Hall Lectures	360
The Incorporated Institute of British Decorators	361
The Architects' Benevolent Society	361
The International Congress on School Hygiene	362
Entrances to a School in Halle	362
The Surveyors' Institution	364
The London County Council	364
Architectural Societies	364
Builders' and Contractors' Column	365
Books—G. A. T. Middleton's "Modern Buildings, their Planning, Construction, and Equipment"; E. Rowe's "Practical Wood-Carving: A Book for the Student, Carver, Teacher, Designer, and Architect"; A. Fairbairns's "Portfolio of English Cathedrals. No. 28—Ripon"	366
Court of Common Council	368
Fifty Years Ago	368
Illustrations:—	
Offices of the "Hamburg Amerika Linie"	368
Hornton Court	368
Proposed House, Chorley Wood	368
Porch of House, Hindhead	369
Sketches	369
Metropolitan Water Board	369
Competition	369
Book Received	369
Trade Catalogues	369
Correspondence:—	
Copyright in Architecture	369
Zodiacs on Medals	369
What is a "Wing-Frame"?	370
The Student's Column	370
Obituary	372
General Building News	372
Foreign	372
Sanitary and Engineering News	373
Miscellaneous	373
Capital and Labour	375
Legal:—	
Appeal from Decision of the Tribunal of Appeal	375
Alleged Negligent Plumbing	375
Litigation as to Reconstruction of Bridge	376
Action against the London County Council	376
Breach of Building By-laws	376
Patents	376
List of Competitions, Contracts, etc.	377
Some Recent Sales	381
Meetings	382
Prices Current	382
Tenders	383

Parenzo and Its Basilica.—I.

PARENZO is a city of ancient foundation, situated on the coast of Istria, about forty miles north of Pola, and possesses architectural remains dating from Roman times, as well as a good deal of mediæval work. Its most remarkable monument, however, is the basilica built by Euphrasius in the VIth century, which has been described in German and Italian, and by Mr. T. G. Jackson in his monumental work on "Istria, Dalmatia, and the Quarnero." But since the publication of that book in 1887 many discoveries have been made in and around the building, greatly increasing its interest, and a short account of what they have revealed, with a few words on the history of Parenzo and on its mediæval remains, may not be out of place.

The excavations undertaken by the late Monsignore P. Deperis, Parroco Decano, showed that there have been four epochs of construction: recent, XIIIth century (Gothic), VIth century (Byzantine), and earlier (Roman). There was a primitive Christian basilica to the north of the present one, and Euphrasius built his upon the foundations of a second, which had succeeded it. The site of the first was used as a cemetery till the end of the XVIIIth century, and was then made into the garden of the bishop's palace. It was oblong in shape, like the most ancient Christian churches, and had no apse, being 75 ft. 6 in. long and 55 ft. 9 in. wide. It had one main door of entrance, and the altar was at the eastern end of the northern portion. The pavement is 5 ft. 9 in. below the level of the basilica of Euphrasius. In the south wall of the portion first discovered (one half of the total area) a door, the cill of which is still preserved, led to an oratory, which Mons. Deperis thought to be 26 ft. square. On the mosaic pavement is this inscription in black letters on a white ground:

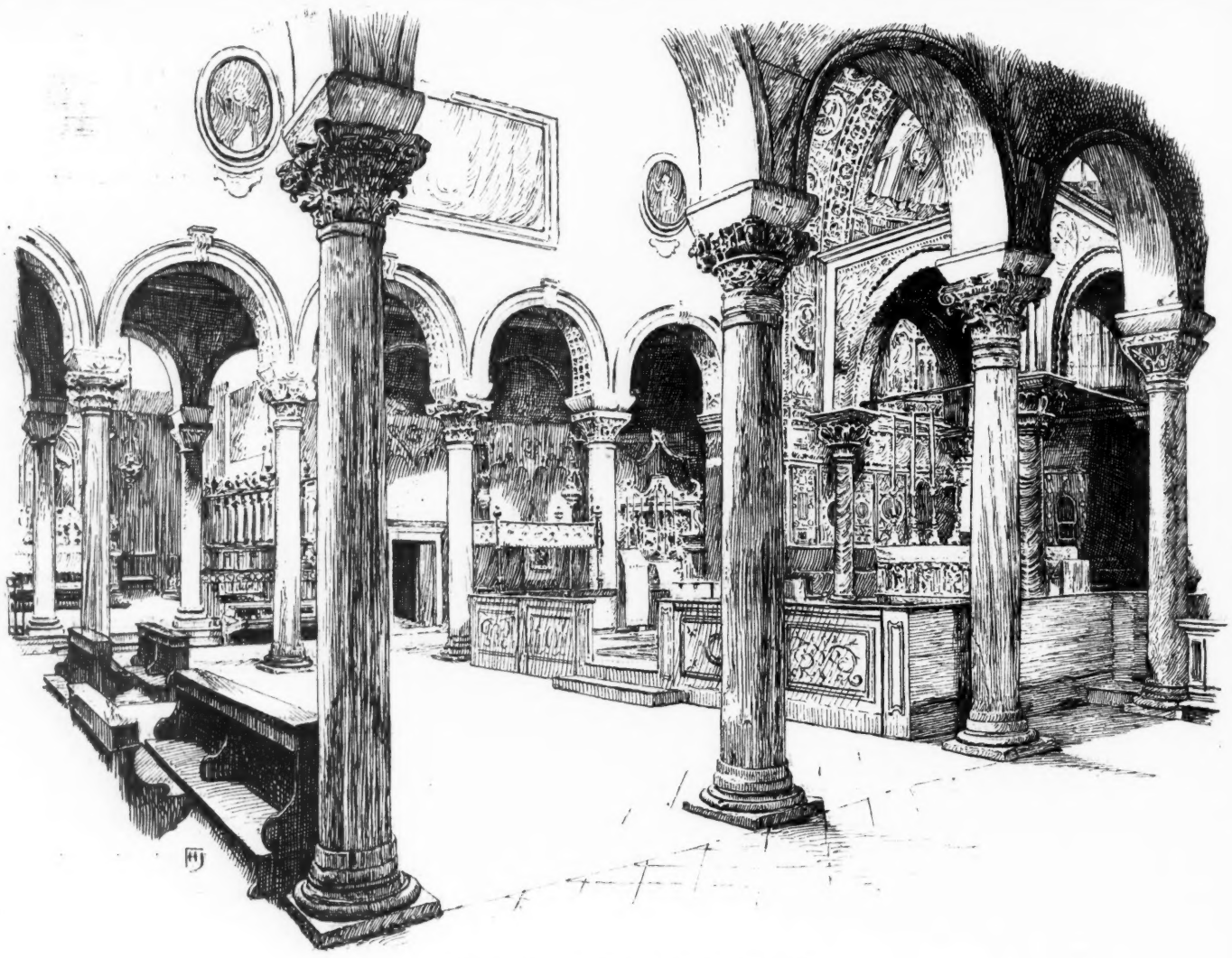
lu—PICINVS
et Pa—SCASIA
cum r—EVERENTIA FA (mula)
FE (cerunt pedes) C(entum).

The remains of the mosaic pavement of the basilica are good in design and execution, and the colours are well distributed. The nave was surrounded by a broad white band, within which was another still broader, sown with starred crosses. The panels with subjects were also surrounded by a similar band. In the first panel from the door is a crown formed of a triple row of olive leaves within a double circle; the outer one has an octagon formed of meanders, and the inner a circular treatment of the same kind. Outside are lilies and other flowers within geometrical forms, and the whole is bordered with interlaced lines. The small circle bears the inscription,

INFAN—tius
ET INNOC—entia
EX SVO P—alatio
BASI—licam et
TES—sellati
P—edes

the right part of which has been destroyed by a tomb.

The middle panel is square; within it is a handled *crater* with a high foot. Two branches spring from it which are bursting into flowers and leaves; they fill the whole place with their convolutions. At the top is an inscription, *Lu PICINVS ET PASCASIA P(edes) CCCC. F(ecerunt)*, and at the bottom, *CLAMOSVS MAG PVER ET SVCCESSA P(edes) C(entum) FELICISSIMVS CVM SVIS P(edes) C(entum)*. This inscription is interesting as showing that at that early date there was a school attached to the basilica. The third panel surrounded the altar, the rectangle of which is marked by the sunken places in the marble slab where the columns stood. A piece of marble of the same size as the sinkings was found not far away. At the right is a square of about 3 ft. 3 in., with a framing of white bands and triangles of colour 10 in. broad, reducing the internal square to 19 in. In the centre below is a fish, and above a symbolic kind of cross based on the swastika. On the left, a cross formed of the intersection of two oval rings appears above the fish. These symbolic crosses point to a very early date, and the doorstep to the oratory shows signs of considerable wear, while the mosaic has been roughly repaired near the word *PICINVS*. The basilica was probably burnt when Diocletian ordered the destruction of all Christian churches in 303 A.D., as charcoal was found among the masonry. The pavement is much broken up by tombs and the old cistern constructed



View across the Nave, Parenzo Cathedral.

in the garden. It extended under the north aisle of the present building, and the site of the altar is shown by lifting a trap-door in the chapel in the north arm of the cross, for the present basilica was made cruciform in plan in 1846-7 by the erection of two chapels. The mosaics which were found in the garden have been completely excavated and covered over with glazed outhouses, so that they are easily seen. Later excavations made in 1900 have proved that the oratory was much larger than 26 ft. square. Opposite the fourth arch of the nave from the west mosaic was discovered on this level, and being followed up towards the east proved to be a continuation of the other found by Mons. Deperis. It was also proved that this first basilica had two equal naves, and a little east of the fifth column remains of a marble chancel were found which recalled the phrase in the S. Maurus inscription found beneath the high altar in 1846, "*ideo in honorem duplicatus est locus*," and suggests that it belonged to the first basilica. The mention of the first church enlarged (*hæc primitiva ejus* (*Mauri*) *oratibus reparata est ecclesia*) of the inscription may record the translation from the cemetery outside the walls. In which case, the words "*ubi episcopus et Confessor est factus*" would refer to the place in which S. Maurus was consecrated and suffered martyrdom; that is, to the more ancient part of the basilica, the pavement of which is ornamented with the symbolic fishes.

The second basilica is probably Constantinian. The present one coincides with it, except that the apse is polygonal and projects towards the east, and that from the fourth column of the nave from the east the line of the walls bends a little to the left. The floor of this basilica is about 2 ft. 9 in. below that of the present one, the cills of the doors, much worn by traffic, of which the principal one and that to the left remain, being about 2 ft. below. The third was destroyed to place a sarcophagus against the walls of the church. The pavement is well preserved nearly all over the surface, and the sacristan opens numerous trap-doors and puts down tapers to show the most interesting portions. Between the two pavement levels several unfinished caps and columns of limestone were found, and also two pedestals and one base among the foundations of the present nave arcade. Beneath the presbytery is a choir and presbytery of the form used in the most ancient Constantinian basilicas. A sloping platform led to the step upon which the bishop's seat stood at the centre of the semicircle, flanked by seats on each side for presbyters, the places being marked by red lines painted upon the fine plaster which covers the low wall rising about 8 in. above the floor, which itself is 2 ft. 3½ in. above the level of the nave. The diameter of the semicircle is about 18 ft., and it is covered with mosaic. First a white band 6 in. wide, then a band of ornament (20 in.), with two black lines at each side, one of which is dentilled. The central portion, a foot wide, has a waving stem, with volutes and leaves of ivy, black and grey on white. In the centre of all are other black leaves and scrolls in red, damaged by a mediæval tomb. Three steps led to the choir, where the deacons, sub-deacons, and singers were. The plaster floor is of a purple porphyry colour. It reaches as far as the third column and is about 2 ft. above the original nave level. It was afterwards extended on a lower level to which steps led at each side, one of which is still in place. The mosaic pavement continues outside the wall of the presbytery (which is rough work, as if it had been an exterior wall), and for some distance at each side, as at S. Maria, Grado. The excavations of 1900 showed that the mosaic found outside the apse of the north aisle, which is rougher in character than that in the nave, went on beneath the Euphrasian wall in a line with the columns, and towards the east finished with a wall which was in a line with that below the apse which Mons. Deperis thought was the confessio, and which continued on the other side of the apse behind the chapel of the Blessed Sacrament to complete the rectangle. Here also mosaic of the same character as that found within the apse was met with at the same level, as well as other walls. To the north of the north aisle wall and parallel to it traces of another wall were found, which suggest that there were rooms attached to that side. The shape of the oblong, with the apse

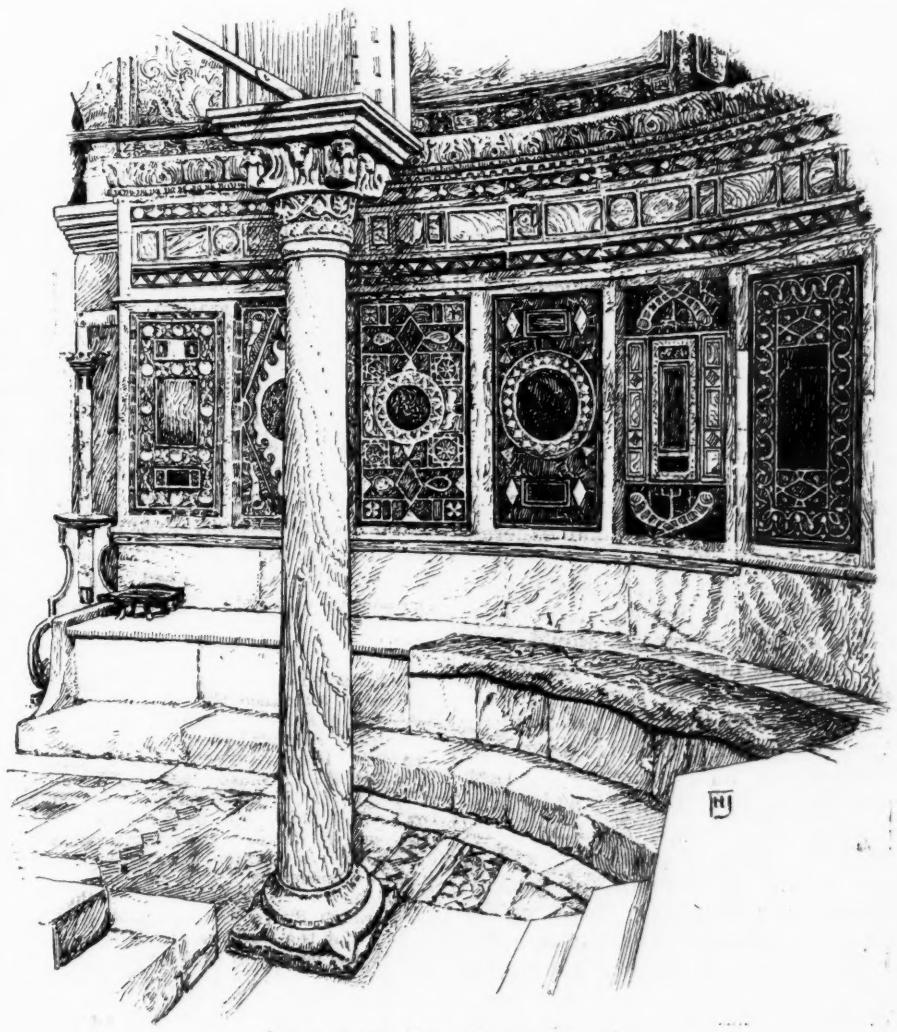
some way within, is like a form found at Salona. An excavation in front of the sacristy door discovered a square mosaic, with inscription

THEOFRASTVS (et)
IANVARIVS DIAC
FEC P CCC

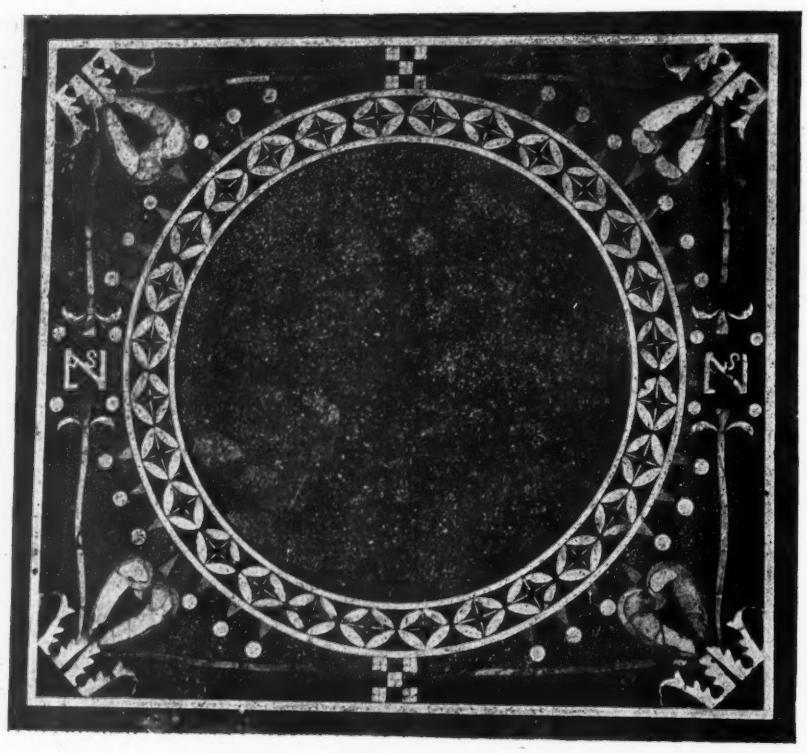
which ended at a line level with the end of the presbytery wall of the second basilica where the seats are, and eastward level with the commencement of the present aisle apse. The mosaic discovered previously commenced west of it and continued along the aisle. The lines of demarcation are smooth and even, as if a wall or screen had been there, but no foundations were found. On the south side a similar stopping of the mosaic was found, and also a bit of a colonnette and a few fragments as of balustrade or cancelli. The spaces beyond were probably *prothesis* and *diaconicon*, the latter being to the left where the two deacons gave the pavement. This left aisle had five designs in its length, given by different donors. The right aisle is simpler. In the nave another inscription mentioning the same Clamosus was found, in conjunction with Victorina, either a daughter or a second wife. This was on the level of the second basilica, and proves that no great time divided the erection of the second from the regular use of the first. The inscription found in 1846 beneath the high altar, already referred to, mentions two churches, and says that the first was repaired by the prayers of S. Maurus, that his body was transferred to that place, and that he was bishop and confessor. His body remained in the church till 1354, when the Genoese admiral, Pagano Doria, having taken the city, took it to Genoa as booty, where it was placed in the abbey church belonging to his family, but was soon returned by the Marquis Doria. The district of the city of Parenzo is called in mediæval documents "territorio, terra de S. Mauro."

The present cathedral was erected by Euphrasius between 531-42, for he says in his mosaic inscription "in the eleventh year of his episcopate" (543) that he had endowed it, which would come after the building. He found the second basilica likely to fall, with the roof only kept up by chains. The columns are of Greek cipollino, like those at S. Vitale, Spirito Santo, S. Francesco, SS. Apollinare Nuovo and in Classe, Ravenna, and S. Maria, Pomposa, and were worked by the same workmen in the Proconesos workshops; for on columns at S. Vitale and Parenzo and also at Pomposa are found the same masons' marks, monograms uniting the letters Π T E for Petrus and I ω for Joannes. The bases are Attic, like Ravenna and SS. Sergius and Bacchus, Constantinople, and of the eighteen caps in the nave six are the same as those of the lower arcade of S. Vitale, several are like others at Grado, two are like a damaged one at Pomposa, and others are much like some at Otranto and in Rome. The super-abaci are also of Greek marble, with a circular plaque bearing the monogram of Euphrasius. On the north the soffits of the arches retain the original stucco ornaments, all different; they have disappeared on the south. The mosaics in the apse resemble those of the Arian baptistery at Ravenna closely in style. The figure of S. Maurus might almost have been worked from the cartoon of one of the apostles there. In the centre of the semi-dome is a figure of the Virgin with the Infant Saviour clothed in white and gold. Above her a hand emerges from clouds holding a crown. On each side is an angel, and beyond three large figures; on the left are Archbishop Claudius, Euphrasius the bishop, with a small figure of his son, and S. Maurus, holding a jewelled urn; Euphrasius holds his church. The three figures on the other side are unnamed; one bears a book, and the other two crowns. The ground is gold, and below at the springing of the dome is the long dedicatory inscription in gold letters on a blue ground. On the wall below are mosaics between the windows. An angel occupies the central pier, and on the piers on each side is a saint, probably SS. Maurus and John the Baptist. On the wide wall spaces beyond the windows are the Annunciation on the north and the Salutation on the south. The soffit of the triumphal arch has medallions of female saints within wreaths, and at the summit an Agnus Dei. The lower part of the wall is separated from the mosaics by an ornamental plaster moulding, and is decorated with a remarkably fine series of panels in *opus sectile*, eight designs in couples answering to each other on each side, with a single design above the bishop's seat in the centre, on which the monogram of Euphrasius again occurs. The colours and materials used are green and red porphyry, two blues and a green, vitreous pastes, a dull red marble, and a bluish-green marble which has perished a good deal and is now preserved under glass plates cut to fit the shapes, occasional spots of an orange colour, like a marble used in inlays at S. Vitale, a very dark blue (almost black), a pale yellow-green, and a pale purple like chocolate powder. The white is generally mother-of-pearl or marble, veined with a pale grey, and a good deal of Oriental alabaster is used. The panel above the bishop's throne has a hill, with a golden cross on a green ground, diapered with mother-of-pearl, and with tall panels at the sides with the seven golden candlesticks. There is a marble seat on a lower level than the throne which runs round the apse and is terminated by two slabs upon which dolphins are carved.

The *opus sectile* at Ravenna is much less elaborate; there was a band which surrounded the church of S. Vitale, terminating the marble plating which once covered the lower part of the walls, which had been mended up with paint when I first visited Ravenna, thirty-five years ago, but still retained a good deal of the porphyry and serpentine, diversified by small panels with incised patterns, which had been filled with mastic, and a few pieces of precious green, orange, and pavonazzetto marbles. The beautiful porphyry slab with inlays of mother-of-pearl and these precious marbles has been chosen by the modern restorers as a pattern for the tinselly and garish ornamentation which now covers the lower part of the wall of the apse. Both in the panel illustrated and in the Baptistery of the Orthodox the treatment is rather simpler than in the



Inlay in the Apse, Parenzo Cathedral.



S. Vitale, Ravenna.

corresponding work at Parenzo; indeed, in the latter a white line divides the purple from the green porphyry, and no other colour appears, the shapes thus defined being very graceful and refined.*

THE PATENTS AND DESIGNS BILL.

WHEN an important measure is introduced under the "ten minutes' rule" in the House of Commons little opportunity is afforded either for an explanation of its provisions or any criticism of its construction. The President of the Board of Trade introduced his Patents and Designs Bill under this rule on the 19th inst., and explained its twofold object to be the simplification and cheapening of procedure, and the prevention of the patent laws being used for the hindrance and obstruction of British industries.

As to the first head, the Bill itself will have to be carefully examined before any opinion can be expressed as to how far it is likely to attain its object. The President of the Board of Trade appeared to attribute the expenses attending patents to a great degree to the high fees demanded by counsel and experts, but this is really effect and not cause—could the machinery and procedure really be simplified, the demand for highly skilled counsel and experts would soon cease and the high fees be no longer forthcoming; and in this connection it is to be noted that the Government intend introducing a Consolidating Bill, which will be amalgamated with that now introduced. The important innovation introduced in this measure is its protection of British industries, and it is to be hoped that no sense of jealousy on the part of those who affect protection in its technical meaning on a wider scale will interfere with the attempt now being made by this Government to hinder unfair advantage being taken of British patents. Mr. Lloyd-George gives some striking figures when he says out of 14,700 patents granted in this country last year 6,500, or nearly half, were granted to foreigners. He stated that many of these patents were taken out not for the purpose of being worked in this country, but also in such vague terms that they could be used to stifle patentees who were anxious to work out their ideas in this country. The Bill will have to be studied to ascertain how it is proposed to avoid these abuses. It appears that the procedure of compulsory licence is to be removed from the Privy Council and transferred to the Controller in the first instance, and then to a specially selected judge. After three years a patent is to be made revocable on proof that it has not been adequately worked in the United Kingdom. Another important innovation is the proposed alteration of the law governing instructions in relation to the use of patents in this country; for instance, a condition that the patent should be used for a term of years and no other. We have said enough to indicate the end which the Bill seeks to attain, but the measure itself will require careful consideration, lest it be found that the rights of patentees, which are already sufficiently limited, are rendered less secure under this proposed legislation.

* To be continued.

SIR HENRY IRVING MEMORIAL.—The Memorial Committee announce that Mr. Thomas Brock, R.A., will execute for them the proposed statue to the late Sir Henry Irving.

STREET IMPROVEMENTS, NORTH SHIELDS.—Lieut-Col. A. C. Smith, R.E., held an inquiry, ordered by the Local Government Board, in the Town Hall Buildings, North Shields, on the 12th inst., in reference to an application by the Tynemouth Corporation for sanction to borrow sums amounting to 2,420*l.* for works of street improvement. In the course of the inquiry the Borough Surveyor (Mr. J. S. Smillie) explained that the work proposed to be done was in respect of new streets not yet taken over by the Corporation. In answer to the inspector, the Borough Surveyor said the sewers were all in. It was proposed to lay cement concrete in all the streets, except at Curiton Green, where the carriage-way would be of tar macadam.

NOTES.

Labour Returns.

FOR the first time for many months the Board of Trade labour returns for February record a slight improvement in the building trade. An increase amounting to 3·2 per cent. more men were employed by those firms making returns than in January, but these figures do not point to any really increased activity in the character of the trade since the severe weather of January had placed an unusual number of men out of employ. The returns show continued prosperity in other branches of trade; the percentage of unemployed was 3·9, as compared with 4·4 in February last year. The total amount of wages paid increased by over 21,000*l.* per week, this advance being divided amongst some 481,000 workpeople, mostly engaged in the mining industry. The most encouraging feature of the returns is, however, a decrease in the number of workpeople affected by trade disputes. Although thirty-seven new disputes were commenced, as compared with twenty-nine in February last year, 17,058 less workpeople were affected by trade disputes, and the duration of the disputes was 76,000 less working days.

The Ventilation of Tubular Railways.

IN a paper read to the French Society of Civil Engineers, M. C. Birault expresses the view that the vitiation of air in tubular railways is caused by carbonic acid gas and moisture exhaled by passengers, organic products of poisonous character, and by the presence of metallic and other kinds of dust produced by friction and wafted about by passing trains. It is not right to say that moisture vitiates air, for it is a natural and beneficial constituent, and even when air is exceptionally humid we cannot characterise it as being vitiated. Apart from this, there is reason for believing, as shown in our Note of March 9, that the atmosphere of low-level railways contains less than the normal percentage of vapour. M. Birault appears to be judging tubular railways in general by the case of the Paris Metropolitan Railway, which is quite near the surface, and where he has found the atmosphere to be far more humid than the outer air. In other respects his conclusions are correct, and we quite agree with the opinion that the best method of ventilation is to draw out the foul air in ample quantities. But to obtain satisfactory results the process must be continued throughout the day, as on the new Piccadilly tube, and not be conducted simply once a day, as on the Central London Railway.

The Westminster Bridge Scare.

WE all know how enterprising daily papers have to be in the present day, and are quite prepared to discount the exciting discoveries announced in their columns. The recent agitation raised concerning the safety of Westminster Bridge did not cause any serious alarm, although said to be supported by the opinions of several well-known engineers whose names, of course, were not mentioned. It is obvious that unless provision is made for expansion and contraction in a continuous paving material

like asphalt, cracks must open and close in accordance with temperature variations. This is all that has happened to the footpaths on Westminster Bridge of late and for twenty years past. Similar cracks are to be found on Battersea and Vauxhall Bridges, and on numerous bridges in all parts of the country. In cases where the footpaths are paved with flags the effects of expansion and contraction are not noticeable because they are distributed over numerous joints. As an illustration of the ready manner in which steel responds to changes of temperature we may mention the fact that when visiting the Forth Bridge some years ago in the early spring the indicator fixed at the south end for the measurement of expansion and contraction showed that during the period of about twenty minutes one of the spans stretched fully 1 in. under the influence of the sun. The paving of the footpath was not affected as on Westminster Bridge because ample gaps, covered by sliding joints, were left to provide for changes of volume.

Forecourts to Shops.

THE case of Corsellis *v.* London County Council, although too technical to be noticed in detail in these columns, raised a very interesting question to owners of house property. The question was whether a strip of land forming the forecourts of certain shops had been dedicated to the public. The land had originally been leased on a building lease by the freeholder for eighty years. This lease was assigned to one Lewry, a builder, who submitted plans to the local authority for the erection of fifteen shops. The plans showed a strip of 3 ft. between the frontage of the shops and the public footway. The local authority, in approving the plans, said that it must be a condition that this 3-ft. strip should form part of the public footway. Mr. Lewry made no reply, but erected the shops. Subsequently he applied to the local authority to pave this strip up to the buildings, and this the local authority did at an expense of some 71*l.* There were gratings in this strip connected with the cellars, and the occupiers of the shops used this strip to display their goods and advertisements. In 1900 the County Council, acting under their tramway Act, doubled the line of tramway rails for electric tramways, and to do this took some part of the footway. The Act empowered them to do this provided that they left 6 ft. of footway. With the strip in question the footway was 6 ft. wide, but without it only 3 ft. wide, and the plaintiffs, the assignees of the leases, applied for injunctions and damages against the County Council, the successors of the former local authority, as trespassers. The County Council set up the defence of dedication to the public. The court decided in favour of the plaintiffs. It was found that the plaintiffs had used the forecourts for over twenty-three years, which was evidence of there having been no dedication, and the learned judge held also that Mr. Lewry, being only the assignee of the lease—which moreover he had mortgaged—had no power without the consent of the freeholder to dedicate to the public, since there could not be dedication for a term of years, it must be in perpetuity. Lastly, it was held that the County Council were acting *ultra vires* under the terms of the Act, because the footway was left less than 6 ft. in width, the 3 ft. near the shops being private property.

Liability for Transit Risks.

AS A result of the traders' agitation upon this subject (which was recently commented upon in our columns), a short Bill has been brought before Parliament dealing with the point at issue. This is, briefly, the extent to which the railway companies are entitled to be protected when goods are conveyed at "owner's risk." Hitherto they have declined to recognise any liability whatever, unless "wilful misconduct" could be proved against their servants. A member of the deputation which waited upon the President of the Board of Trade last December urged that this was practically an impossibility, for it meant that a detective would have to accompany every package of goods, and that he would need to possess the power of looking into the hearts of the officials who dealt with it. Mr. Lloyd George has had to interview several deputations on railway rates since then, including one from the Railway Companies' Association especially charged to argue the question dealt with by this measure. It is now proposed to make them liable for all damage due to "gross negligence," even though the reduced "owner's risk" rate has been charged. The Bill passed the second reading last Friday without encountering much opposition, but the companies strongly object to the expression quoted, and will, no doubt, endeavour to get it modified in committee. Seeing that the traders have hitherto been compelled to accept the "wilful misconduct" clause, or pay the often prohibitive "company's risk" rate, the railway companies have had the whip hand up to now, and it is hardly surprising that they object to the proposal. Their contention is that "gross negligence" is ambiguous, and they will, doubtless, see to it that more work is provided for the lawyers should the term be adopted. But the rejection of the phrase now would clearly amount to putting a premium upon such conduct, and unless a very comprehensive alternative is suggested, the Committee will do well to insist upon its retention.

The Arbroath Railway Accident.

IN our Note of January 26 we commented upon the unusual laxity characterising the conduct of traffic on the Dundee and Arbroath Joint Railway. In finding the engine-driver guilty, the jury strongly recommended him to lenient treatment in consideration of his good character, the exceptional weather conditions, and the lax state of things at Elliot Station. We are glad that the Lord Justice Clerk sympathised with this view, for, in our opinion, the driver was less blamable than other and more highly-placed employees of the company. Still, the sentence passed on this man will serve to remind careless engine-drivers of their responsibilities, and the publicity given to the inefficient conduct of the railway has already led to the introduction of a system which ought to have been adopted long ago. The previous state of things was almost worthy of an American line.

Petrol Motor-Omnibuses.

ADDRESSING the Institution of Mechanical Engineers last week, Mr. Worby Beaumont drew attention to the rapid development of the motor-omnibus from the experimental stage to that of widespread practical importance. The position is made very clear by the fact that while barely four years have passed since the first petrol omnibus was in operation in this country, there are now on the streets of London alone nearly 900 vehicles of the kind, carrying about 185 million passengers a year. Considering the great rapidity with which motor-omnibuses have been introduced, it is not surprising that the severe conditions of service were not fully anticipated. In past designs there have been faults, from some of which the public continue to suffer, but on the whole the matter for surprise is that more mistakes were not made. Mr. Beaumont's paper is largely devoted to mechanical details which will be discussed very fully by members, and it is to be hoped that the result may be helpful to those who are anxious to introduce further improvements in design and construction.

The Lighting of Vehicles.

THE Lights on Vehicles Bill, which has been read a second time, would appear from the criticisms offered in debate to be a somewhat inperfect measure. The intention seems to be to attain uniformity in the lighting of vehicles throughout the country by compelling all vehicles to have a head light visible to those approaching from the opposite direction. In these days of mechanical traffic which attains high speeds a tail light is of just as much importance as a head light. In some counties (Kent, for instance) the by-laws in force compel the lights exhibited at the side of vehicles to be so constructed as to show a red light behind. This arrangement is an excellent one, and lamps can be so constructed and exhibited as to fulfil the double function of head and tail light in one. The Bill has been referred to the Standing Committee on Law, and it is to be hoped that it may be amended on the lines indicated above. In these columns we have repeatedly drawn attention to the dangers attending the use of the unduly powerful lights which are favoured by motorists. In the course of the debate the Chairman of the Royal Automobile Club and Motor Union admitted that motorists recognised the danger those lights occasioned to users of the highways, but said that their use would be obviated if tail lights had to be exhibited on slower vehicles. This admission is somewhat typical of the attitude of the motorist to other users of the King's highways, but it affords an argument for amending the Bill in the direction we have indicated, especially as one lamp can easily be made to attain both objects, and no extra expense would be put upon those using the roads for vehicular traffic.

The Fatigue of Concrete.

ALTHOUGH it is definitely known that some structural materials are affected by repeated loadings, and inferred that

other materials are probably affected in the same way, the subject has received far less attention than it deserves. A series of experiments made by Mr. J. L. Van Ornum at Washington University form the subject of a paper in the current number of the *Proceedings* of the American Society of Civil Engineers, and the results there stated are of considerable value. The fatigue of concrete under high percentage loads is clearly demonstrated, its influence being limited to an intensity of about 50 per cent. of the compressive strength of the material as usually determined. Therefore, making allowance for unavoidable variations of strength, it becomes evident that designers of concrete structures must necessarily adopt a factor of safety of more than three. As the author says, this consideration does not affect conservative designs, but it does give a clear warning against the unduly high working stresses that are occasionally brought to light. In the case of reinforcing bars, the reduced value of the bond caused by great excess of water in mixing the concrete was found to be considerable; but the effect of moisture in the strength of the bond is a subject requiring more extended investigation. The author's results agree with those of other experimentalists in respect of the elastic properties of concrete repeatedly stressed to low percentages, but they show further that indefinite repetitions of stress, if below the fatigue limit, do not alter the proportionality of stress to strain. Hence it would seem that all formulæ for concrete-steel designed for ordinary working conditions should be based upon Hooke's law, reserving rules which are based upon parabolic and other stress-strain curves for application in scientific calculations to the conditions existing during the first stage of loading or at failure.

The Reading-room of the British Museum.

THE approaching closing of the reading-room of the British Museum for a period of six months for inspection and renovation is a serious matter for many students, not only English but foreign. That it has not been closed since it was built some fifty years ago is perhaps more remarkable than that it has now to be temporarily withdrawn from use. The chief question is whether as good temporary accommodation can be found for students as is reasonable. It is exceedingly difficult to differentiate between the importance of students' researches, and it has also to be borne in mind that a comparatively unimportant piece of work from a literary or scientific point of view may be of vital personal importance to a student who is earning his livelihood by literature. It would appear to be desirable to adopt to some extent the practice of London social clubs, which, when closed for annual cleanings, make arrangement with other clubs for the accommodation of their members. There are many libraries in London—that of the Royal Institution and of the British Architects, for instance—where a student on some one subject might find the necessary authorities. It would be desirable for those in charge of the British Museum to make arrangements with these and similar institutions to allow a student to make use of their libraries upon a proper introduction.

Abbey Dore Church.

WE regret to learn that the roof of the transepts of this fine church is in a dangerous state, and that it is urgently necessary to carry out repairs to this portion of the fabric, not only to save the roof itself, but to prevent injury to the remaining and repaired portion, which would be seriously damaged should the roof of the transept collapse. At a meeting of the executive committee held at the Palace, Hereford, on August 28 last, a report from the architect (Mr. Roland W. Paul) was read on the state of this portion of the church, and it was decided to issue an appeal for 1,000*l.* to enable the work to be carried out at the earliest possible date. It is intended to treat the roof in exactly the same way as that of the presbytery, preserving Viscount Scudamore's interesting woodwork, substituting oak boarding at the back of the joists for the present plaster ceiling, and relaying the stone slate roof on felt and boarding. The masonry of the gables and buttresses will also require repair, and the coping must be renewed where defective. The church of the Cistercian Abbey of Dore is a building of national interest, and furnishes the only example of a Cistercian presbytery now used for divine service. Those who would like to subscribe towards the repair of the fabric can communicate with the Rev. A. Phillipps, the Rectory, Abbey Dore, Hereford.

Institute of Painters in Water-Colours.

THE Institute shows a thick catalogue and a large expanse of wall-space, but, alas, how little of it is really profitable to the spectator! Leaving out of the question things such as Nos. 224, 338, 409, 450, 480, and others, the vulgarity of which causes a shudder, there is such a large proportion of work that, good up to a certain point—

> ——"which point
> Is the most difficult in punctuation"—

leaves no definite impression on the mind. Among the exceptions are two beautiful drawings by Mr. John White—"Pathways—Thorncombe Beacon" (98) and "Spring, Branscombe" (318); works which show delicate finish in landscape painting without losing atmosphere and the sense of distance. Curious to contrast with these Mr. Hill's "Harlech" (324), which looks as if it were painted with mud, and to reflect that there are critics in plenty, of the present moment, who would class this sort of smudge of landscape as the superior work. Mr. Robert Fowler's quasi-classic figure of "A Dreamer" (81) seated under a tree shows fine colour and poetic treatment in the landscape, though the figure is rather prosaic. Mr. Joseph Knight's "Late Autumn" (107) is a fine landscape, but a convention in colour, like his other works in the exhibition; one thinks rather less of them after seeing two or three in succession. Mr. John Reid's pictures form a healthy contrast, in their bright open-air effects of Nature. Mr. James Orrock represents the old English school of water-colour in a large and broadly-treated landscape, "Old Mill, Charnwood" (202). Miss Hobson's "Shobly Lane" (217) has the true water-colour style, and she also shows a very good drawing of "Wells Cathedral" (279)—good both in an architectural and a pictorial sense. Sir James Linton's "Clearing Up" (294) is a good example of what used to be called "interior with figures." Mr. Haité's "The Lagoons of Venice" (325) shows a finely-treated expanse of calm water, and he always has colour at command. Mr. Bernard Evans, whom we have hitherto known as a landscape painter—his "Cannock Chase" (40) is an over-accentuated storm effect—comes before us with a new class of subject, "Sunday Morning in the Seven Dials a Quarter of a Century Ago" (393), which is clever, but rather historically than artistically interesting; one of the numerous works in the exhibition which only suggest looking in the catalogue to find out what it represents. Mr. Weedon's "Sturry, Kent" (352) and "Gravel-pits, Fittleworth" (362) are water-colours of the right kind, of which we do not need the names to interest us. Among other things to be mentioned are Mr. Henry Stock's "Wonder Thought" (38), a little study of a nude infant in a style that seems suggested by Watts; Mr. G. Cockram's "Evening Glow" (44), an effect of colour in a marshy land; Mr. Straton Ferrier's "Solitude" (88), a flat beach, a wreck, and a rainy sky; Mr. Brock's "Sindbad Carried Away by the Roc" (124), in which the claws of the Roc (the only part seen) form a careful and effective study; Mr. F. Walton's "Hertford Bridge" (240); Mr. Aumonier's "The Quiet of the Evening" (266); Mr. Straton Ferrier's "Tantallon Castle" (341); Mr. David Green's "Crossing the Bar" (399) and "After the Storm" (319); Mr. E. E. Briggs's "Snow Showers on Ben More" (415); Mr. Margetson's "The End of a Summer Day" (488), a variation of his favourite fantasia of a single figure on a sea-beach; and Miss Whitley's "Shells" (272), a delicate little bit of still-life painting.

The Leicester Gallery.

AT the Leicester Gallery is a collection of pictures painted in Austria-Hungary by Mr. and Mrs. Adrian Stokes. The *milieu*, a rather out-of-the-way one, naturally furnishes a great deal of local colour, using the term in its wider sense: Mrs. Stokes's contributions are all studies of the people of the country, painted in tempera; many of them highly characteristic both in costume and physiognomy; and, from the number that are marked "sold," they seem to have proved a great attraction to visitors. Mr. Stokes's paintings of Hungarian scenery convey a certain character in the landscape which one feels as unfamiliar, though it would be difficult to define in what this impression consists. Among the larger landscapes, the "Islands of the Adriatic" appears to be a smaller repetition of the picture that was in the Academy last year. "Fort St. Lorenzo, Ragusa," standing up on its high rock out of the water, is a very effective picture; but most of all we like "A Backwater of the Danube," an ideal picture of calm and quiet beauty. In another room at the Leicester Gallery is a collection of mezzotints of the XVIIIth century, with a preface by Mr. Whitman, of the Print department of

the British Museum, which is worth reading as a short analysis of the characteristics of the principal mezzotint artists whose work is exhibited, though we confess that we look at an exhibition of this kind more for the historic interest of the portraits than for the nuances of handling in mezzotint; the personages are of more interest than the process.

Mr. Little's Water-Colours.

THE predominating impression in looking at the collection of water-colours by Mr. Robert Little at the Fine Art Society's gallery is that he has a remarkable faculty of seeing colour in landscape—colour which not all of us see, certainly, though one may be met with Turner's retort—"Don't you wish you could?" Mr. Little translates Nature into a gamut of his own; but we regard this as quite a legitimate process; it is not the object (or at all events, not the sole object) of landscape art to imitate Nature, but to use Nature as a means of expressing feeling. Many of the small works here are interesting suggestions of landscape effect; and the few on a larger scale are very fine pictures; notably that of "Clusium," with a grand sky, and "Trasimene, Dawn," which has more of natural effect than some of the others; an effect of uncertain light very difficult to convey in painting, and here shown with remarkable mastery. It is a picture that must not be looked at too close; the intended effect is best realised a little distance away. Among the smaller drawings, "Harbour Building, Viareggio" is noteworthy for its slight but clear indication of colour on houses and buildings; and in another architectural sketch, "Old Tower at Viareggio," we seem almost to have got on the track of Prout again.

The New "Old Bailey."

WE are glad to observe that the Lord Chief Justice, on taking his seat in the new First Court of the Old Bailey buildings on Wednesday, before making some observations on the principles of law which were to be maintained in those courts, found a word to say in praise of the new buildings. So much had been said, he observed, and so well said, respecting these new buildings, that he only desired, on coming there for the first time to take the Judge's list, to congratulate the Corporation of London and the legal profession on the new courts. "So far as we can judge at present, they are admirable in their arrangements in every way." It is so common, in such cases, to find the merits of the building and the credit of the architect entirely ignored, that this exception is worth noting. Perhaps in time we may even find a judge or other high official, in a similar case, complimenting the architect by name.

FRONT OF PROPOSED HOUSE, WIMPOLE-STREET.

THIS house is proposed to be arranged with dining-room, library, and billiard-room on the ground floor, and drawing-room, boudoir, and small conservatory on the first floor.

The front is of Portland stone, backed with brick, the motive in the design being to emphasise the dining-room on the ground floor, and the drawing-room on the first floor. The water-closet and lavatory accommodation is provided to all floors, except the first floor. Passenger and food-lifts are provided, and economical service assured. The entrance-hall and staircase are to be panelled in oak, and the public rooms are to have parquet flooring.

Mr. H. Guicharde Todd is the architect. The drawing was exhibited at the last Royal Academy.

Proposed House, Wimpole-street.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE usual fortnightly meeting of the Royal Institute of British Architects was held at No. 9, Conduit-street, W., on Monday evening, under the chairmanship of Mr. Leonard Stokes.

Libraries.

Mr. J. Duff Brown (Chief Librarian of the Islington Public Libraries) and Mr. H. T. Hare, F.R.I.B.A., read papers on "Libraries," of which the following are abstracts:—

Mr. J. Duff Brown, treating of library planning as affected by modern library policy and interior arrangements, and discussing the question of finance, lamented the fact that the English Libraries Acts do not specify the amount which shall be borrowed for building purposes, as in the case of the Scotch Acts, which provide that only one-fourth part of the income from the library rate, capitalised at twenty years' purchase, shall be borrowed, thus putting a definite check upon the mistakes and extravagances of committees. In most cases throughout England this reasonable proportion of the library rate has been enormously exceeded, with the result that many of the buildings possess architectural merits, but as libraries are failures. The craze for overbuilding, because the money is easily obtained, has been responsible for numerous cases of library buildings which are collections of bricks rather than of books, and whose equipment is so meagre, and funds so scarce, that the hours have to be shortened in order to avoid a gas bill which would extinguish the penny rate!

The author went on to consider the following points, which he put forward as suggestions for discussion:—

Is it advisable in the interests of progress and efficiency to standardise library plans and methods by adopting one uniform system for everything? The author hoped that the factors which were being sought to bring about this uniformity would never be discovered, and that architects would continue to design, and librarians to invent, fresh solutions of every problem presented.

Systematic classification, by introducing more scientific methods of arrangement, will necessitate some alteration in the structure and spacing of bookshelves. Exact classification has brought about changes in the height, spacing, and adjustability of bookcases; and has had some influence in bringing into use the "open-access" system, which the author predicts will within the next few years become all but universal. The "open-access" system has been the means of important modifications in planning. In both reference and lending departments, the bookcases must be easily accessible from the floor without the use of steps, and the spacing of standard bookcases when facing each other must be arranged so that readers can stand back to back at the shelves and still leave sufficient gangway for others to pass. This extra space is very nearly balanced by throwing into the room the lobby usually reserved in front of indicators and similar closed systems. If the library is periodically weeded of obsolete books, congestion only arises in a few cases and for a brief period. The best shelving for a public library is the homes of the borrowers, and for that reason elaborate efforts to find accommodation for books which are generally in circulation is a mistake.

Another department in which great changes are certain to happen is the reference library. Its function in the past has been to collect books rather than to utilise them for purposes of research; it has become rather a book museum than a literary workshop. The author advocated complete isolation for students in the reference library, so that everyone should have a reserved self-contained place at a table, with plenty of accommodation for spare books and table space sufficient for the arrangement and spreading-out of reference works and papers.

Another matter which may influence planning is the question of limiting the supply of newspapers. Many libraries have cut down the supply. In some the provision is limited to the exhibition of the "situations vacant" columns cut from the morning paper: in one place newspapers are not taken at all. By limiting newspapers considerable economy is effected in the cost of space, stands, and fittings, lighting, staff, etc.

Mr. Hare said that the public library had been the occasion for many competitions, and it might have been expected that, with so much effort concentrated on a comparatively simple subject, some very brilliant type of plan or design would have been evolved. This, however, had not been the case, for none could claim to be the last word in library design. If the problem were dealt with from the initiatory stage (*i.e.*, the selection of the site) under proper advice a much better result might in most cases be attained. Often in a library for a moderately-sized district accommodation was asked for twenty or thirty thousand books in the lending department. This needed a very large room, and was quite unnecessary. A large proportion of the books, particularly fiction, quickly go out of date. Shelving for ten to fifteen thousand volumes would generally be sufficient for an average district; it might be supplemented by an adequate store-room, where books could be economically housed. The reference library also is often over-sized: for an average library, accommodation for from twenty to thirty readers is ample. The bulk of the books might be housed in a stack-room adjoining the reference-room. The usual treatment of the reading-room is susceptible of much improvement. The ideal reading-room should partake more of the nature of a hall, with probably an open roof, or at all events, considerable height. It should permit of the spacing of the furniture very widely, allowing ample gangway for persons to move about without disturbing the readers.

The author suggested that the lending-library might be included in the reading-room, so reducing the typical library to two main public rooms—viz., a general reading-room and library, and a smaller room for reference readers opening out of it. This arrangement would obviate the necessity for passages, entrance-halls, and staircases, and all available funds could be devoted to those parts of the building actually used by the public. The author touched on the "open-access" and "indicator" systems, and showed the manner in which the adoption of either the one or the other must influence the design of the building. The necessity for the supervision of the lending-library in all its parts from a central fixed point appeared to suggest as the ideal plan for this room a semicircular form with radiating bookcases. On confined and irregular sites such a plan, however, is very difficult, if not quite impossible. The importance of supervision by the staff should not be exaggerated, as the public using the library largely supervise themselves.

A recent development in the direction of rendering libraries more widely useful as educational centres, where lectures can be given, has introduced a new element in the planning, separate entrances and exits having to be provided. From this point of view, it is open to question whether the familiar news-room, with its costly fittings, is really a necessity. In the new libraries being built in Islington no newspaper-room is being provided, but only a large general reading-room containing magazines and periodicals.

The author, in conclusion, urged the desirability of reconsidering our views of the necessities of a public library in the direction of a much more simple type of building—viz., one large hall with very ample space both in floor area and cubic capacity. This would be economical, comfortable, and convenient, and would lend itself also to dignified architectural treatment—the latter of the first importance from an educational point of view.

Mr. Maurice B. Adams said he proposed the vote of thanks with the utmost cordiality and with an individual appreciation of both papers, recognising the useful observations which had been brought forward. He happened to have read a paper himself on the subject, and fully recognised, as both lecturers stated, that it was very difficult to say anything particularly fresh. At the same time, if the readers of the papers realised that, what must he feel in venturing to make a few remarks after they had concluded. There seemed to be a discrepancy between the two speakers when Mr. Hare wished to simplify and co-ordinate the general planning of libraries and Mr. Brown contended that they ought not to make these buildings too much on the same lines. Probably Mr. Brown was looking at it from the librarian's point of view with regard to its utility to particular localities, and in that he most entirely concurred, because he could not help feeling that the purposes of these libraries had been often mistaken altogether, or to a large extent, at any rate. He regretted that they had not been made the workshops they should have been, and the fact that they were overstocked with newspapers certainly had been a very great mistake. Newspapers had depreciated so terribly during the last few years. The system of snippity paragraphs and encouraging all kinds of speculative energies in the way of finding hidden treasure and other like things were most detrimental, he took it, to the intelligence of the community. He thought the majority of newspapers could be very well dispensed with, and he very much doubted whether newspapers still exercised the influence on public opinion which they used to. Without wishing for a moment to enter into any question of politics, he would ask them to realise what was the position of the newspaper press in London at the present time. The Government had an enormous majority in the House, and yet they were not able to maintain one decent London morning penny paper. He thought the condition of the newspapers warranted this criticism, and justified the proposal to limit the space given to them now in libraries, so that they could employ that space much more usefully. With regard to the "open-access" system, he happened to see a number of replies which were obtained by the St. Pancras Library Committee from all parts of the kingdom recently as to the advantages and disadvantages in the opinion of librarians with regard to this manner of conducting a library, and the replies were overwhelmingly against it. He was rather surprised at that because several persons, and he amongst the number, had been hammering away advocating the advantage of the "open-access" system. What they wanted to do was to bring the public face to face with books so that they could see whether a particular book exactly suited their individual requirements, and then the public would become more intimate and more in love with books. They could handle a volume and leave it alone if the book did not answer their needs. If there were three or four books of reference on one particular subject it was impossible to say which book one required until one had actually seen it. He was very strongly in favour of the "open-access" system, but he did not quite see why Mr. Hare should call the place the officials worked in "a hen-coop." A better description would be an elongated enclosure, from which supervision could be carried on quite well. He took it that it was not a question so much of the supervision of the public as the provision by which they were liable to be seen at any moment. If openings were more or less freely distributed round the building the public would behave fairly well. They did not know exactly when they were being looked at, and provided that there was the possibility of their being seen the probabilities were that they would behave properly. He did not understand exactly how they were going to make the two papers agree upon the differing ideals advocated. Of course, Mr. Brown spoke of all libraries as being too much alike, but if they for a moment imagined the differences of sites it would be seen how impossible it was to make libraries all alike. As to the success of Mr. Hare in such buildings he spoke with some feeling because he was one of his competitors, but he willingly acknowledged Mr. Hare's skill all the same. The way in which Mr. Hare had managed to roof the large upper room at Wolverhampton was most ingenious, and he appreciated the ingenuity with which the stack-room at Hammersmith was arranged. This had found some imitators, but when a man did a good thing like that there was some excuse for others not hesitating to adopt it, and he was sure Mr. Hare would be the last to object to that. With regard to the heating of these buildings, that seemed to him a most difficult thing, because if they used radiators they made the place in such a dreadful dirty state, and they also occupied valuable wall space. Lately he had reverted to the old system of using what might be considered a barbaric thing—that was the open grating, and so getting the heat more generally dispersed. The librarian where this work was done had assured him

that it had been a success. He put some cork lino in the panels so as to reduce the noise when going over the gratings, and he thought it had turned out rather a good idea, and it certainly did not make a mess. With regard to Mr. Hare's model plan, as he said at Cambridge, it seemed to him that the children having to go through the reading-room to reach the juvenile department would be rather an objection, but he did not consider it so great an objection as would be a rear lobby where the children could get out. He felt juveniles were more likely to behave if they came in the front way.

Mr. E. A. Baker (Librarian, Eltham Library), in seconding the motion, said that Mr. Brown had distinguished himself amongst librarians by the boldness with which he had worked out his problems to first principles, and put them into effect regardless of opposition. He had distinguished himself more especially by reviving the "open-access" system, and by his recent experiment in abolishing newspapers, and he only trusted that the last experiment would be as much a success as the first one. He said that Mr. Brown had revived the "open-access" system, because, after all, it was not really a modern idea, and he believed it was in force probably in the earliest libraries of papyrus. At any rate, they knew that it was in force in libraries one hundred years ago, and the closed library system was quite modern. It was introduced about fifty years ago when public libraries were first opened, and when mechanics' institutes were opened, bringing large bodies of comparatively uneducated persons face to face with large masses of books. There were obviously considerable difficulties in knowing how to administer to these crowds of readers, and to provide that the books should be used intelligently, and he supposed the difficulties were so overwhelming that librarians thought the best way would be to shut the libraries up and dole the books out through a pigeon-hole. Mr. Brown had shown them how to adopt a more scientific system, and he felt sure his prophecy was quite correct, and that the "open-access" system would sooner or later be universal. It was quite true that there had been a great deal of hostility to this system, and that a great deal of hostility existed now, but that was, he believed, greatly due to the inertia of librarians who were in charge of libraries organised on the old plan. The difficulty of converting a library on the closed system to an "open-access" library was a very great one indeed, and he thought that probably in the near future the problem before architects would be not so much to devise new libraries as to how to convert the closed libraries into "open-access" libraries. These difficulties were really very formidable indeed. He had had the pleasure of seeing Mr. Brown's library at Islington, and it seemed to him that he had carried out the most modern ideas of library administration there, not only with the greatest economy, but with great artistic effect.

Mr. R. J. Angel asked if Mr. Brown could tell him what his experience had been as to the loss of books with the "open-access" system. He did not want a percentage of the losses to the books in the library, but the actual figures, because a library might have a considerable number of books which might not be readily accessible. Reference had been made to the bad method of filling in forms and giving out books on the "indicator" system as compared with the great saving on the "open-access" system, and he ventured to suggest that an excellent planning was that of the Southend library, which gave a maximum of counter space. He thought that might be a solution of the difficulty. If they had a long counter where the public could be distributed, and where there were several indicators, each indicator governing its own class of books, and an assistant in charge of each indicator it seemed to him that the public could be very readily served and dispersed. They had been reminded of the British Museum as being a model, and were asked why the system adopted there could not be followed in other places. He would suggest one good reason why it could not be followed, and this was the system upon which readers became members of the library. It was much more difficult to become a member of the British Museum Library than of a local library in London or the country. Anyone practically could become a member of a library in London, no matter how insignificant he may be, provided that he can get one or two guarantors to sign his papers. He thought that was rather an argument against copying the British Museum, because it was quite likely they might get persons of very indifferent character slouching into the public libraries with hands not particularly clean, and handling valuable books. Such a person would have an absolute right to do this with the "open-access" system, and in handling a valuable book he would probably "make his mark" upon it. Another argument against the "open-access" system was the noise which resulted. Little parties would come inside and discuss whether they would have this book or another, and a lot of talking would take place which would be very objectionable. One speaker remarked that the public would want to know the kind of books they were going to get, but it seemed to him if librarians properly catalogued the books the public would know what kind of book they were going to get. After all, they could not get information from the back of a book, and if books were properly indexed and the catalogue contained the gist of the contents of the book, that would do all that was needed.

Mr. Peddie (St. Bride's Library) said he had seen the library at North Islington, and it struck him that it was the result of a most happy combination of architect and librarian. He was afraid that it was occasionally the case that a library was planned without reference to the librarian, but, of course, that was always before the librarian was appointed. If this was so, unless the architect had had considerable experience of the wants of libraries from the librarian's point of view, he felt that there must be something lacking in the plan. He felt it was absolutely necessary that the two partners in the concern (if he could put it as broadly as that) should be in absolute consultation, and he believed the North Islington library was the result of such a combination and partnership. He knew that Mr. Brown's book on "Library Planning" was very extensively read, and that his articles were the latest word on the subject, and he knew that Mr. Hare had had a great deal of experience in library planning. The North Islington building appeared to him to be most like a library than any other building he had seen and was most admirably adapted for its purpose. The reading-room with its semicircular shape absolutely "filled the bill." It enabled perfect supervision, and at the same time gave the maximum of space for the shelving round the walls. Then, again, the lecture-hall was most admirably adapted for its purpose. The only criticism he had to offer, and he offered it at once when he saw it, was that he did not think there was sufficient space given for the tables in the periodical-room, but probably that had been altered now. That was hardly the place to discuss the question of "open-access" v. "closed libraries," but there was no doubt that the value of a book was immensely raised by being placed directly into the hands of a reader, so that he could look through it before taking it away to read. A little entry in the catalogue whether it was annotated or not was not sufficient really to indicate the style of the book. When a reader was able to take a book down from the shelves and just glance through it to see whether it was a long or a short book or written with a jerky or smooth style, he was able to choose a work which would suit him much better than by looking in the catalogue. He thought that the general consensus of opinion amongst educated people must be in favour of the "open-access" system, although, possibly in an uneducated community, a modification might be necessary.

Mr. A. F. Philip (Gravesend) remarked that librarians must be quite happy that night because the subject of "open-access" libraries was one which had been tabooed in the Library Association for a long time. There were two points which had been overlooked. The "open-access" system was not in the experimental stage now, but the abolition of the news-room was. These things might be all right for those who had put them into operation, but it was not in every town that such a thing could be done. Architects blamed library committees and librarians for the restrictions which were placed upon them, but he would point out that it was not always their fault. They had to realise that in a country town everyone knew everyone else, and a member of the library committee was buttonholed at every street corner to hear the views of his constituents, and, after all, it was these people who were often uneducated who were the ultimate masters of the situation.

Mr. Page said that an important thing was that if the "open-access" system was adopted it required a great deal more space. At Brighton he understood that this system had been altered because of the thefts of books. One of the greatest objections, however, he believed, was this. A person—generally a woman—came into the fiction department to look at the books, and she was not quite sure what she wanted. She took a book down and wandered away with it looking at other shelves, and then forgot where she took it from and pushed it into the shelf nearest to her. The result was that it took a great deal of time for the librarians to replace the books in their proper places.

Mr. F. Hooper thought that whilst they had had a great deal of food for reflection there was one matter they might commend to the Council of that Institute. They had heard a great deal about the "open-access" and many of them would appreciate an attempt to carry out that system in their own library. It would be desirable to employ a skilled joiner to take off the hinges and locks from the cases in that room.

Mr. F. J. Osborne Smith said that in a library not far from there, containing 300,000 books, the space between the gangways was 2 ft. 3 in., and he did not see why it was necessary to have such enormously wide gangways to get access to the books.

Mr. H. V. Lanchester said that Mr. Hare had referred to the question of flooring. He had seen an excellent material from America which was a rubber-tiled flooring. There was only one drawback. He asked the cost, and they said: "It is not very expensive—1 dollar 90 per foot" One speaker also had referred to an annotated catalogue. Well, he was unwise enough to become a member of a library, and they sent him an annotated catalogue, and he read about a book which had "a romantic interest of the mediæval period," and of another book which had "a strong scientific bias running through it." When he got through the catalogue he felt that he did not want to read any book at all, for the annotated catalogue was enough to upset anybody's taste for reading.

Mr. Froude (Bermondsey Library) said that with regard to the question of consultation between librarian and architect, he was not quite so sure that it was always a good thing. He could quite understand that nowadays any architect when planning a building for a public library would use the best ideas that had gone before, and whether he consulted with the librarian or not appeared to be a matter of some indifference. There were librarians and librarians just as there were architects and architects, and some librarians could not in the least assist the architect. For that reason he thought the architect when relying largely on his own knowledge and experience would do quite as well as by taking into consultation the average librarian in the planning of buildings. A librarian as a rule knew all about books, but he must confess that he was not a success as an architect. He thought from that point of view that while the architect might adopt broad general lines from the librarian it would be a mistake for the architect to permit himself to be led into details. He stood as a defender of the "closed" library as against the "open-access" system, and he would not like architects to go away with the idea that the "open-access" system had proved the great success claimed for it. There were great differences of opinion on the subject. He remembered the Liverpool Public Reference Library being specially planned many years ago for the "open-access" principle, but the privilege was so abused that it had to be withdrawn, and to this day that principle only applied to a few books of insignificant value. If architects and librarians were asked to put their own libraries on the "open-access" system they would rebel at once. It could be seen from

the reports that in America where the system prevailed hundreds of books were lost.

The Chairman said he could not pose as an expert on the question, but they had heard a number of experts who seemed somehow to differ. So far as he knew anything of the question, his sympathies lay with the "open-access" system. It might not be the most economical, but it seemed to him to be the best, and if it was the best then surely it would be worth a little sacrifice of expenditure and the loss of a few volumes of fiction per annum.

The resolution was carried.

Mr. Brown, in reply, said that where there were proper safeguards the losses were insignificant. In the case of the Clerkenwell Public Library 200 books were lost in ten years, but against that they had to put the saving by having no indicators. The American losses referred to were due to the fact that the system there was entirely different. In America anyone could go in from the street and take up a book. A speaker referred to the nuisance of parties coming into an "open-access" library and discussing the merits of a book, but, as a matter of fact, in such a library only ticket-holders got into the library, whereas where there were indicators a reader could bring in half his family. No municipal library in England or in America had abandoned the "open-access" system, but the Bishopsgate-street library in London, which was not a municipal library, had abandoned it. The picture of a reader wandering about with one of Marie Corelli's novels in her hand was quite imaginary, for in practice it did not happen. In North Islington, where 1,200 books went out in a day it only occupied about half an hour tracing misplaced books. He thought an occasional conference between architects and librarians would be a good thing, for there were many small points which wanted threshing out.

Mr. Hare said he was hoping that someone would have attacked the plan he put forward. It was said that the "open-access" system took up a great deal more room, and that was quite true, and also it was more expensive. The great question, however, was whether it was more useful, and on that he did not think there could be any doubt.

The Chairman announced that the next meeting would be held on April 8, when Mr. Stanley Hamp would read a paper on "Hotels."

THE CARPENTERS' HALL LECTURES: "THE WALLACE COLLECTION."

THE fifth of the series of lectures on matters connected with building was delivered at Carpenters' Hall on Thursday last week by Mr. M. H. Spielmann, F.S.A. The subject was "The Wallace Collection," and Sir Lawrence Alma-Tadema, O.M., R.A., presided.

Mr. Spielmann said the bequest of this famous collection to the nation was one of unprecedented magnificence. England had enjoyed no similar endowment, and even France could scarcely equal it. The Wallace Collection was brought together principally by Francis Charles, the third Marquis, and Richard, the fourth Marquis of Hertford. The second Marquis had, however, formed an important nucleus for the collection, and it was also largely added to by Sir Richard Wallace, to whom it passed on the death of the fourth Marquis. In 1842 the fourth Marquis succeeded to the estates and made his home in Paris because of the facilities that existed there for acquiring works of art. His vast income and small domestic expenditure enabled him to buy largely, and his additions to the collection were very numerous. He was a great sufferer, and his greatest satisfaction was to receive the news that he had defeated his competitors for a picture. The collection was in danger from the excesses of the Commune, and was removed to London by Sir Richard Wallace, and had remained here ever since. Sir Richard was a man of fine taste and judgment who, having assisted Lord Hertford in his collection, himself added to it when it came into his possession, and at his death the disposition of these priceless treasures was left to his widow's own discretion. She presented them to the Nation, and we now enjoyed the benefit of her patriotism. The visitor to the galleries at Hertford House would acknowledge that he met a sight whose equal he had never seen before. It was a collection of vast extent and unsurpassable beauty, consisting of furniture of the most beautiful design, clocks, candlesticks, and other objects of decorative art, European and Oriental armour, and pictures. The armour was the finest collection in England, and some idea of its monetary value might be established from the fact that the merest fractional portion of this armour—a few swords in a case—cost 73,000*l*. In this section were some 1,300 items, of which a suit of war armour for man and horse belonging to the XVth century was a remarkably fine specimen for the period. Another, a XVIth-century French half-suit, was a fine example of embossing, and acknowledged to be the most splendid suit in Europe. There were also swords of all sizes, powder-boxes, stirrups and spurs, and various parts of armour, all of interest and value.

Sculpture, as distinct from what is usually understood by bronzes, did not make such a great show. The furniture was very beautiful, and by it woodwork could be traced from the time when it was logical and subdued up to the time of the extravagant designs of the XVIth to XIXth centuries, and in all the workmanship was of a very high order. There was a writing-table which occupied not less than nine years, and cost several thousand pounds to make. Some of the tapestry formerly contained in the collection had been burnt, but that which remained demonstrated the fact that they must always use strong, crude colours in tapestry as they might be depended upon to go down four or five tones. One of the miniatures—a portrait of Holbein by himself—was a particularly good example. It was not as big as the King's head on a five-shilling piece, but firm and full of character, and even the photograph, much enlarged, shown on the screen could scarcely reveal an imperfection. The pictures were a wonderful collection, and among them were several examples of masters not included in the National Gallery. There were not a great number belonging to the early period, most of them being of the XVIIth, XVIIIth, and XIAth century, and the French school was greatly favoured. One of the finest works in the collection was Cima's "St. Catherine of Alexandria," which was great, not only by reason of its execution, but for the beauty of the face. The "Virgin and Child" of Sarto was remarkable for originality of expression and charming effect. It was painted in 1528, and was recognised as one of the best example of the master in or out of England. Sarto was fond of using his wife for a model, but, as might be seen in this picture, she was very unfit, her expression and bearing being out of accord with the subject. Of the paintings of Velasquez the "Portrait of the Infante of Spain" was one of the most characteristic. It possessed great charm, and was more highly finished than were most of the pictures of this master. The "Portrait of a Spanish Lady" is one of the few portraits by Velasquez of a lady outside the circle of the Spanish Court, for in his time few ladies other than Royalty sat for their portraits on account of the rigour of the Spanish church law. Murillo was represented in the collection, two of his pictures, "The Virgin and Child" and "The Marriage of the Virgin," being beautiful specimens of his art. The Wallace Collection was notable for the extreme richness of its examples of the Dutch School, and had it contained no others it would have still claimed a forward place in the world. It was interesting to compare Rembrandt's great picture, "The Centurion Cornelius" (more generally known as "The Unmerciful Servant"), with other pictures painted thirty years before, as showing the development of style. The "Laughing Cavalier" of Hals was a miracle of dash and vigour. The face was highly finished—almost breathing, and the dress was beautifully finished. Up to the time of the purchase of this picture by Lord Hertford for a single bid of two thousand guineas, no work by Hals had fetched more than 80*l*., and the event had the effect the purchaser intended, for the prices immediately went up. But the surprise of the collection was the painting by Bourssse—"Woman Cooking." It was painted in Amsterdam in 1656, and but for a few cracks might have been painted only sixty years ago so well was it preserved. The colour was as true and the white as unfaded as when first executed. The "Church by a Canal" by Heyden had seldom been equalled for minuteness of detail, luminosity of colour, delicacy of finish, and breadth of effect, and "The Sleeping Sportsman" (Metsu) was known throughout the world to students, and had always been of the highest repute among connoisseurs. Rubens' love of the picturesque, cheeriness, and the qualities of vigour were well exemplified in his "Rainbow Landscape" with its fine vista, rich colour, and finely-executed rainbow. The French School, although incomplete, historically considered, contained many fine and interesting examples. In no gallery in the world could such a display be seen of the art of Watteau. The "Return from the Chase" was one of his most brilliant works and probably his largest. It was interesting to observe that, although the broken colour in the picture was exquisite, the drawing and colouring of the chestnut horse was one of the weak points—he had his hind legs only. The same painter's "Music Party" formerly belonged to Samuel Rogers. It was hard to believe that the author of such pictures as these was a man of ill-health and despondency. Boucher was represented in the collection by a large number of pictures, of which the "Rising of the Sun" and the "Setting of the Sun" were not originally intended as pictures, but as models for the Gobelin's factory. When the "Setting of the Sun" was exhibited at the Salon it created a furore. The painter told Sir Joshua Reynolds that he never painted from Nature, as Nature put him out. Of the works of Greuze, the best example was the "Listening Girl," whose portrayal was beautifully fresh as well as pretty. Some of his other pictures struck one as being insincere; they were merely pretty. "Innocence," compared with Sir Joshua Reynolds' "Love Me, Love My Dog" illustrated this. Greuze's portrait of Mlle. Sophie Arnould, the famous singer at the French Opera, depicting her as beautiful and frail, was a fine work. The effect of the pictures of the British School facing the other masters in the gallery was a tribute to the position held by British Art, which no words could convey, and proved that the British masters could compare favourably with those of any other School. Reynolds's "Nellie O'Brien" was one of the most perfect examples, remaining perfect to the present day, and was charming alike in drawing and colour. Sir Thomas Lawrence's "Countess of Blessington" and the three portraits of Mrs. Robinson ("Perdita") by Romney, Gainsborough, and Reynolds respectively, were works of great value.

In conclusion, Mr. Spielmann said that whether the collection was worth five or seven millions did not concern us. We had to consider it as a place of Art and refreshment, and as he examined those pictures by men who had raised them step by step on tradition, it convinced him that there was a great deal in tradition, and that Art might be affected by what had gone before if unaffected, healthy, and sincere.

The Chairman proposed a vote of thanks to the lecturer, and said he was in agreement with his remarks on tradition. We could not do without our fathers and mothers, nor could we do without the knowledge they imparted to us. It was so with Art; the works of our ancestors showed us what had been done, and taught us what it was possible to do.

The vote was carried unanimously, and with a similar vote to the Chairman the proceedings terminated.

GOOD FRIDAY WEEK.—In consequence of the Easter holidays, next week we go to press a day earlier than usual. All communications for the Editor must reach him by *first post on Wednesday morning*, except lists of tenders, which will be received up to 10 a.m. of the same day.

CENSUS OF PRODUCTION ACT AND THE BUILDING TRADES.—The President of the Board of Trade has nominated a General Committee to advise upon the general scope of the census and the methods and principles to be adopted and followed in gathering the requisite information. Special committees will also be appointed to deal with the special requirements of particular trades, and will consist of leading manufacturers and nominees of their trade associations. Committees are already being formed for the building, iron and steel, engineering, and some textile trades.

THE INCORPORATED INSTITUTE OF BRITISH DECORATORS.

THE annual dinner of the Incorporated Institute of British Decorators was held at the Trocadero, Piccadilly-circus, on Monday, Mr. J. D. Crace, President, in the chair, supported by Messrs. Lewis F. Day, Hugh Stannus, L. Shuffrey, G. H. Morton, Col. Bennett, W. G. Sutherland, and others.

The loyal toasts having been proposed by the Chairman, and suitably honoured,

Mr. W. H. Pitman, C.C., Treasurer, proposed the toast of "The Incorporated Institute of British Decorators," and in the course of his remarks he said that a great deal had been done by the Institute during the seven years of its existence. It was very difficult in London to interest members of the craft in an association of the kind, and the Institute received its best help from the country—from Scotland and the northern and West of England districts. In London it was difficult to make people interested in the craft and to help it forward by association, but the help from the provinces had been very real. The membership of the Institute now numbered 450, and he hoped that in the near future that number would be largely increased, especially as a rule had been passed during the last few months enabling the Institute to admit, not only employers and others interested in decorative work, but also those concerned in decoration and in superintending decorative work for large limited companies, and he hoped, therefore, that there would be a large increase in membership and usefulness. The Institute this year had made a departure in offering a gold medal for work in decorative design, and a very good beginning was made in presenting it to Sir William Richmond, who had carried out important work at St. Paul's Cathedral, and also in the new Old Bailey. He thought they were doing something that was creditable to the craft, and he hoped that they would be able to go on doing so. The President, Mr. Crace, who had been President from the first, was well known, not only in England, but also throughout the world of decorative art, and they were proud to have him at the head of their body.

The President, in response, said it had been a very strong wish of his to make the prosperity of the Institute a reality. That prosperity must depend largely upon personal interest and trouble on the part of the members. The Institute existed, in the first place, to enable those engaged in the craft to become acquainted one with the other, and, secondly, for the promotion of what might be called the artistic and intellectual side of the craft. Before he sat down he should propose a toast, *i.e.*, "The National Association of House-painters" for England and Scotland, and Ireland, and he might explain that, whereas the National Association, admirably organised, existed for the promotion of that which tended to the commercial prosperity of the calling of the decorator, the Institute left that alone, as it was so well dealt with by the National Association, and it aimed rather at establishing what one might call a professional feeling between the members themselves, and at studying in what way the beautiful art and craft of decoration could be promoted from the point of view of claiming the admiration of their fellow-men. That was an aim they might all feel proud to have in view, and he earnestly hoped that the members of the Institute would not lose sight of the importance of joining in the discussion on subjects of interest to the craft. With the toast he coupled the names of Mr. Morton, the President of the English portion of the National Association, Col. Bennett, and Mr. Sutherland, who would respond respectively for the Scottish and Irish branches of the Association.

Mr. G. H. Morton, in response, said he agreed with the President's remarks as to the relative positions of the National Association and the Institute. What they had in the Institute was a higher authority in craft matters to which they looked. He thought there was a tendency for decoration to deteriorate. Price was the great question in regard to their work, and in some recent speeches he had made at local Association meetings he had contended that the lowest tender should not necessarily be accepted, but in most cases exception had been taken to that view on economic grounds and because it was considered an unbusinessl ke view to advocate. But if price was to be the main object in work, merit would seem to be of little account. It was with deep regret that he had to refer to the death, at an early age, of the late President of the Association, Mr. Turner, of Wakefield, who had lately been elected a liveryman of the Painters' Stainers' Company.

Col. Bennett said he regretted that neither Mr. Sibthorpe nor Mr. McIntyre were present to respond. He and others in the provinces were surprised that London only supplied some sixty members to the Association, and he suggested to the London members that they should each make themselves responsible for obtaining ten new members during the coming year. There should be at least 500 or 600 London members. In Glasgow a very good feeling existed between the National Association and the workmen, and for the last forty years there had not been a strike on the part of the men. Strikes were wasteful to masters and men, and disputes should be settled by arbitration.

Mr. W. G. Sutherland, of Manchester, said that the Institute had some very loyal supporters in Ireland, and Mr. Sibthorpe had been conspicuous in his zeal on its behalf. An important step had been taken by the Institute, as had been mentioned by Mr. Crace. When the Institute was founded it was proposed to restrict it to those who were actively employed as master painters and decorators throughout the three kingdoms, but, unfortunately, such a body could not be sustained unless the members took an active part in it, not merely by paying their subscriptions or attending meetings, but by providing subjects for discussion and by taking part in those discussions. The members had done too little in that respect, although the President had set a splendid example. By the step just taken men would be admitted who were accustomed, not only to the carrying-out of decorative work, but who could formulate ideas and express them to others. By enlarging the scope of the Institute he thought they would get the sort of men they wanted.

The Chairman then proposed the toast of "The Arts of Design." Decoration, he said, was absolutely dependent on design, and design took many forms, and decoration might be said to have relation to almost all of them. The art of design covered almost everything, and he should couple with the toast the name of Mr. Lewis F. Day, who was a leading representative of the art of design, and his well-known designs and his way of explaining design were well known.

Mr. Day, in response, said he gathered that the members of the Institute desired to do something more than make money. Making money was, of course, the first thing, but there was something else, and the decorator who did not think there was anything else was not much good as a decorator. The "arts of design" was a very large order, but the arts of design referred to meant the arts of design as applied to decoration, and he was afraid there was very little art in decoration. There was a great deal too much design sometimes, and there was a great deal too much talk about art. Art was, of course, the thing, and the decorator who did not think about art was no decorator; but too much was said about art. We might forget it a little and try and do some good work, for the more a man talked about art, the less he did of it. In a way they could not think too much about art, but they could about themselves as artists. Everybody connected with decoration tried to design—to do something to show what a clever fellow he was, and that was the curse of decoration. They had to depart from what had been done, but, in a way, the less they departed from that the better. Taste was a quality that was rarely mentioned now, for people did what they liked, regardless of taste, thinking that one man's opinion was as good as another's. If decorators wanted to decorate well, they must cultivate their taste; taste was one-quarter of the battle, and the individual only a little part. But the individual was rampant now, and everyone tried to push his individuality to the farthest point. He had had to do a great deal of examination of students in design for the Board of Education, and in examining one looked to the drawing and put down so many marks for originality, so many for appropriateness, so many for drawing, and so many for taste. In asking if a design had any originality one often had to say: "Yes; but I wish to goodness it had not." Decoration, from his point of view, was really the art of making the best of it. The circumstances were given, and out of them they had to make the best of it. The work had to be made to pay, but the decorator had to get credit to himself and be proud of his work. It was a satisfaction to know that such an Institute existed with aims above the trade aims. He respected the trade, but he thought the decorating trade could be carried on with thoroughly artistic impulses.

THE ARCHITECTS' BENEVOLENT SOCIETY.

THE annual general meeting of the subscribers and donors of the Architects' Benevolent Society was held in the Rooms of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, W., on Friday last week, Mr. J. Macvicar Anderson presiding, in the unavoidable absence of the President, Mr. Thomas Collcutt, the President of the Royal Institute of British Architects.

The minutes of the last meeting having been read and confirmed,

Mr. Percival Currey, the Hon. Secretary, read the fifty-sixth annual report and the statement of accounts for the year ending December 31, 1906. The report was as follows:—

The Council of the Architects' Benevolent Society in presenting their fifty-sixth annual report have the pleasure to record a year of increased prosperity and usefulness. Many new names have been added to the subscription list, and the capital account has benefited both from donations and bequests. This favourable result is largely due to the letter of appeal which the President (Mr. T. E. Collcutt) issued towards the end of the year to over 5,000 architects. The thanks of the Society are due to the President for his exertions in this matter, by which the sum of over 100*l.* has been added to the annual income and 175*l.* to the capital account. If the appeal had not been issued the income would have been insufficient to meet the demands made upon it. Notwithstanding the success of the President's appeal, the number of subscribers on the Society's books is still very small compared with the number of practising architects.

It is satisfactory to learn that the allied societies are taking an increased interest in our labours. Mr. J. T. Cackett in his Presidential address to the Northern Architectural Association at Newcastle-upon-Tyne stated that there was no better way to help our less fortunate brethren than through this Society, and he believed that the amount granted to recipients in the northern province exceeded the subscriptions derived by the Society from the district. He also alluded to the fact that their Past-President, Mr. Glover, was now a Vice-President of the Society.

Eighty applications for relief were received during the year, and the sum of 743*l.* 12s. 6d. was distributed in seventy-five grants. In addition to this, the sum of 183*l.* 15s. was paid to pensioners, thus making the total amount expended in relief 927*l.* 7s. 6d.

The investments have been increased by the purchase of 1,186*l.* 17s. 9d. New Zealand Three per cent. Inscribed Stock for the sum of 1,067*l.* 13s., which raises the total of amount of invested capital to 15,506*l.* 7s. 5d.

The thanks of the Society are due to the A.A. Musical Society for the donation of part of the receipts of a students' concert [21 guineas].

Seven meetings of the Council have been held during the year.

The following gentlemen, being the five senior members, retire by rotation from the Council:—Mr. Rowland Plumbe, Mr. G. T. Hine, Mr. Ambrose M. Poynter, Mr. William Grellier, and Colonel R. W. Edis. To fill the vacancies caused by these retirements the Council have the pleasure to nominate:—Sir Henry Tanner, Mr. Edwin T. Hall, Mr. Lacy W. Ridge, Mr. John T. Christopher, and Mr. J. Douglass Mathews.

The Council have also the pleasure to nominate Mr. Henry T. Hare as a Vice-President.

The cordial thanks of the Society are due to the Royal Institute of British Architects for office accommodation and for the use of rooms in which to hold their meetings, and to the Secretary and staff of the Institute for their help in many matters connected with the Society.

The Chairman, in moving the adoption of the report and balance-sheet, said he thought they might congratulate themselves on the extremely satisfactory character of the report, inasmuch as there had been an increase during the past year of both income and capital. The report stated that but for the President's appeal, the income would have been insufficient to meet the demands made upon it, and the practical application of this was that, unless a similar increase was made this year, the Council would be

unable to meet the demands made upon the funds next year, for, in consequence of the bad times, there was not likely to be a diminution of the number of those who were compelled to come upon the funds. Therefore he appealed to every architect in the profession to do something to promote the interests of the charity. It might be said that those who came to grief did so through their own fault, but that certainly did not apply to all. If everyone tried to get a friend to subscribe to the funds of the charity there would result a most substantial increase of the income.

The report and balance-sheet having been adopted,

Mr. R. St. A. Roumieu moved, and Mr. J. T. Christopher seconded, and it was agreed, that a vote of thanks be accorded to the retiring members of the Council.

On the motion of Mr. G. Scamell, seconded by Mr. H. Lovegrove, the following gentlemen were elected as members of the Council for the ensuing year, *i.e.*:—

President, the President of the Royal Institute, Mr. H. L. Florence, Mr. G. B. Bulmer, Mr. F. W. Hunt, Mr. W. L. Spiers, Mr. Arthur Ashbridge, Mr. Walter Emden, Mr. Reginald Roumieu, Mr. H. Chatfeild Clarke, Mr. A. Saxon Snell, Sir Henry Tanner, Mr. Edwin T. Hall, Mr. John T. Christopher, Mr. L. W. Ridge, and Mr. J. Douglass Mathews.

Mr. T. M. Rickman moved, and Mr. W. Flockhart seconded, and it was agreed, to elect Mr. H. T. Hare and Mr. W. Glover as Vice-Presidents of the Society.

On the motion of Mr. H. L. Florence, seconded by Mr. A. Saxon Snell, a vote of thanks was accorded to Mr. W. Hilton Nash for his services as Hon. Treasurer, and he was re-elected for the ensuing year.

Mr. Nash, in response, said he joined the Society fifteen years ago, when their capital was about 7,000*l.* Now it is 15,000*l.*, and he hoped they would soon be able to raise it to 20,000*l.*

A hearty vote of thanks was also accorded to Mr. Currey for his services as Hon. Secretary, and he was re-elected to the position for the ensuing year.

Mr. Currey replied, and referred to the assistance he received from Mr. R. Dircks, the assistant secretary.

Mr. Hilton Nash moved a vote of thanks to Messrs. Perks and Greenop, the auditors, and he also moved that Messrs. Greenop and H. P. Burke Downing be elected as auditors for the ensuing year.

Mr. Lovegrove seconded, and the motion was agreed to.

Mr. Greenop, in reply, said that the Surveyors' Institution had built up their library by requiring, though making it appear quite voluntary, that each member when elected should make a donation of books to the library, or, instead of that, a sum of one and a half to two guineas. He thought they might help on the work of the Architects' Benevolent Society on those lines. Perhaps when a man was elected as an Associate or a Fellow he could more easily be persuaded to help the Society, and a carefully-worded notice issued by the President at such a time might have good results.

Mr. W. Grellier moved, Mr. Currey seconded, and it was agreed, that the following resolutions adopted at the last annual meeting be confirmed:—

"That the following be inserted after By-law No. 7 and be numbered By-law No. 8:—'Allied societies and corporate bodies representing architecture who are now or may become annual subscribers of not less than 10 guineas, or donors in one sum of not less than 50 guineas, shall be entitled to be represented on the Council by their President or Chairman for the time being, who may also vote at all general meetings, and shall be entitled on behalf of his Society to the same privileges as those of individual donors or subscribers.' And to renumber consecutively the subsequent by-laws. That after the words 'Hon. Secretary' in By-law No. 9 the following be added:—'And the President or Chairman for the time being of societies and corporate bodies who have qualified under By-law No. 8.'"

On the motion of Mr. Currey, seconded by Mr. Christopher, a vote of thanks was accorded to the Royal Institute of British Architects for the use of the rooms.

The Chairman, in reply, said there had been a good deal of talk about the removal of the Institute to another site, which he did not think was at all as good as the present one. He should like to see the Institute get possession of the present premises, and, in his opinion, that would be a satisfactory settlement of the difficulty.

A vote of thanks was, on the motion of Mr. Roumieu, seconded by Mr. Hine, accorded to the Chairman for presiding, and the proceedings terminated.

THE INTERNATIONAL CONGRESS ON SCHOOL HYGIENE.

A MEETING was held at the Mansion House on Wednesday afternoon of the General Committee of the second International Congress on School Hygiene, which is to be held in London during August 5 to 10 this year. The Lord Mayor occupied the chair, and amongst those present were the Chinese, Greek, and Servian Ministers, Sir Lauder Brunton (President of the Congress), Sir Edward Brabrook, C.B., the Hon. Sir John Cockburn, K.C.M.G., Sir Richard Martin, Bart., and Sir Aston Webb, R.A.

The Lord Mayor, having briefly referred to the importance of the work the Congress had in hand,

Sir Lauder Brunton explained that the object of the meeting was to enlist the interest of those present in the forthcoming Congress, and to ask for their support. The Congress was an assemblage from every civilised country in the world of people interested in the health of school children. The first Congress took place in Nuremberg in April, 1904. It owed its origin to the energy of Professor Griesbach, who was convinced that in all civilised countries the question of health in school children, as well as in adults, was one of the foremost in importance, and that the problems and efforts of school hygiene would be greatly facilitated and forwarded by the combined action of different nations. It was decided to hold the first Congress in Germany, and in response to invitations delegates were sent from every part of the world, and more than 1,000 members were present. The work of the Congress consisted in general meetings, lectures on subjects of general interest, and special sections for the discussion of various branches of school hygiene. In addition, there was a museum for the exhibition of all appliances relating to schools. The movement met with success, and it was decided that a similar Congress should be held triennially. In making arrangements for the second Congress, committees, both national and local, had been formed in this country, in the colonies, and in most civilised countries. Subjects which were to occupy the attention of the Congress had already been notified to the committees, so that they could be considered beforehand by those who came to the Congress, and they might thus be able to obtain a world-wide opinion in regard to each subject. There were eleven in all, and they might be divided into four groups. The first group of three dealt with the best methods of training for the mind and for the bodies of healthy scholars; the second with children who were defective in body or mind, or who were subjects of disease or illness; the third with the important subjects of medical inspection, of the instruction of both teachers and children in the laws of health and with the health of the teaching profession; and the fourth group dealt with residential schools, and with school buildings and equipment. The subjects in the first group included the proper relationship of the work that was given to the various faculties of the mind, the hours to be devoted to learning, the intervals between the succession of subjects, and the relationship of mental work to bodily exercise and play, and the physical training of the body so that each faculty should be fully developed. This training should take the form of gymnastics and drill in school, supplemented by games and holiday schools and camp out of school.

The first section of the second group dealt with the proper teaching of those who were defective in mind, the second with those who were defective in body, and the third with the detection and treatment of deficiencies, illness, or disease. Tubercle might be detected in its early stages, and with proper treatment the child's life might be saved. At present schools were too apt to be hotbeds of infection, and from one child an epidemic of scarlet fever, measles, or diphtheria might spread over a whole district, while by early detection and isolation the mischief might be arrested.

Medical inspection of children was dealt with in the first section of the third group, and it was to be hoped this would be made compulsory, for it was the groundwork upon which the superstructure of school hygiene must be built. It was upon medical inspection that we must depend for assigning to the proper classes the children who were defective in mind or body, and for detecting the first signs of phthisis or the symptoms which indicated infective disease. But in all these cases the medical inspector would require help from the teachers, who must therefore receive instruction in hygiene. The children also must be taught, not for their own sakes only, but for the sake of the generation which was to come, for the boys and girls of to-day were the fathers and mothers of fifteen or twenty years hence. The health of the teacher needed to be cared for also, and that formed an important section. For both teachers and taught, it was necessary that schools should be thoroughly hygienic, well ventilated, and well lighted; that they should not be chilled by draughts, nor choked by stuffy rooms.

It was evident that an internal discussion and expression of opinion upon all these subjects would be of great advantage to teachers and scholars all over the world, and the country would reap some special advantages by having the Congress in London.

Dr. Macnamara, M.P., said that the State had done a good deal for school children during the last thirty or forty years. Forty years ago a boy of seven years of age was allowed to work in a factory for seven hours a day, and a boy of ten might work for ten hours a day in a coal pit. Now, however, a boy or girl must be twelve years of age before he or she could work in a factory, and then only half-time, and a boy must be thirteen before he could go to work in a pit. He was not saying that all that was necessary had been done, but that some advance had been made. There was a necessary improvement also in the designing of school buildings. They were frequently receiving applications at the Local Government Board in respect of schools built not more than thirty years ago, and now in good structural condition, which were represented to them as calling for a new loan for alterations on account of the enhanced view the public take of educational suitability. He might say of the House of Commons as a whole that there was no subject upon which you could appeal to them with such a ready response as you could on the condition of the children of England. The time had come for going into the subject on a more accurate and scientific basis.

Sir John Cockburn said that a programme of receptions and excursions had been arranged, and these must not be regarded merely as entertainments. They were intended as opportunities for the open and free discussion among the members of the subjects under consideration, and as such were extremely useful. The first reception would be at the University of London, and there would be visits to the other University cities and to places of interest.

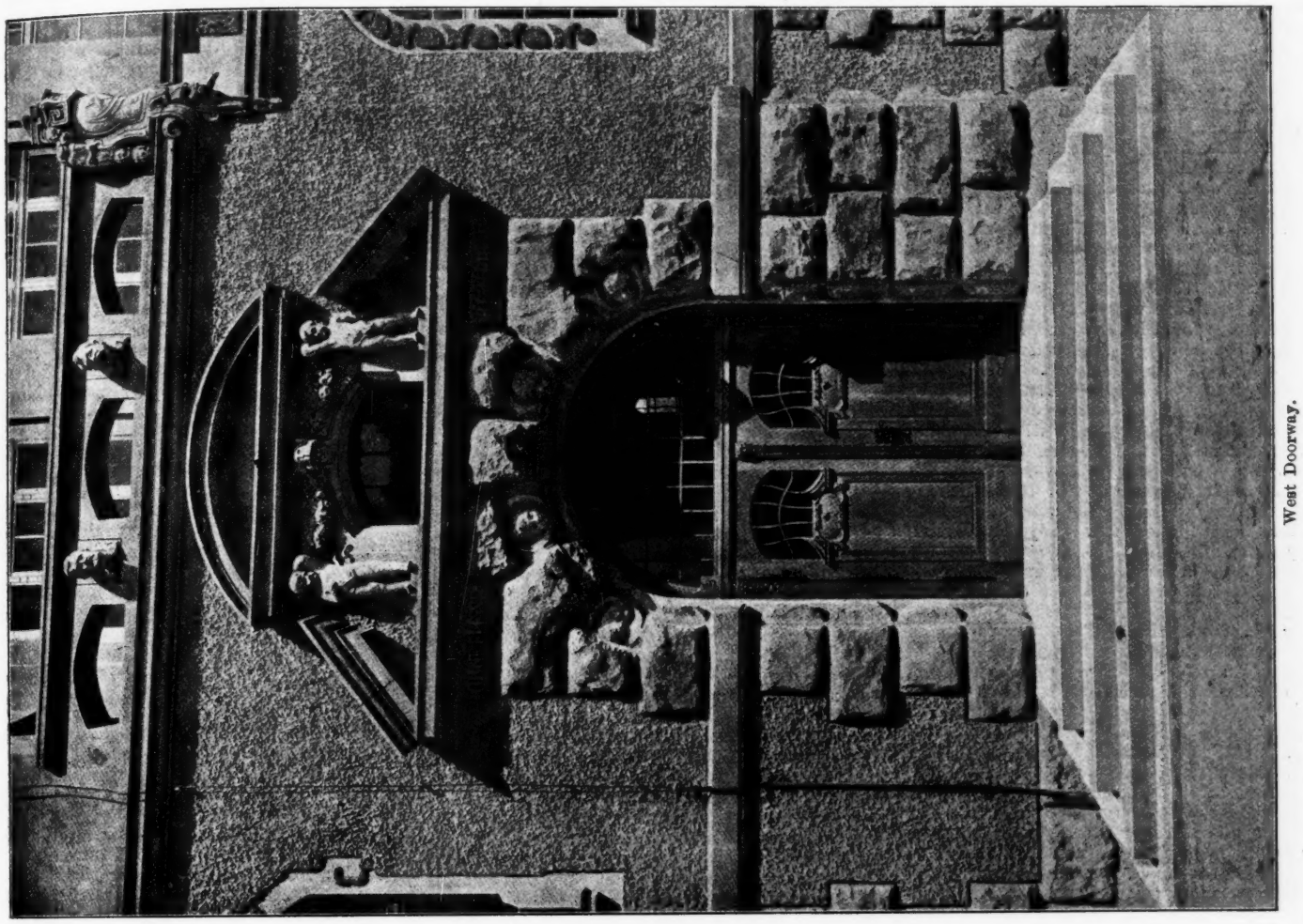
Sir Edward Brabrook said that the Royal Sanitary Institute had undertaken an exhibition which would be an object-lesson in regard to matters to be brought before the Congress.

Sir Richard Martin having appealed for funds, Mr. Moseley proposed a vote of thanks to the Lord Mayor for his presence and the use of the Mansion House.

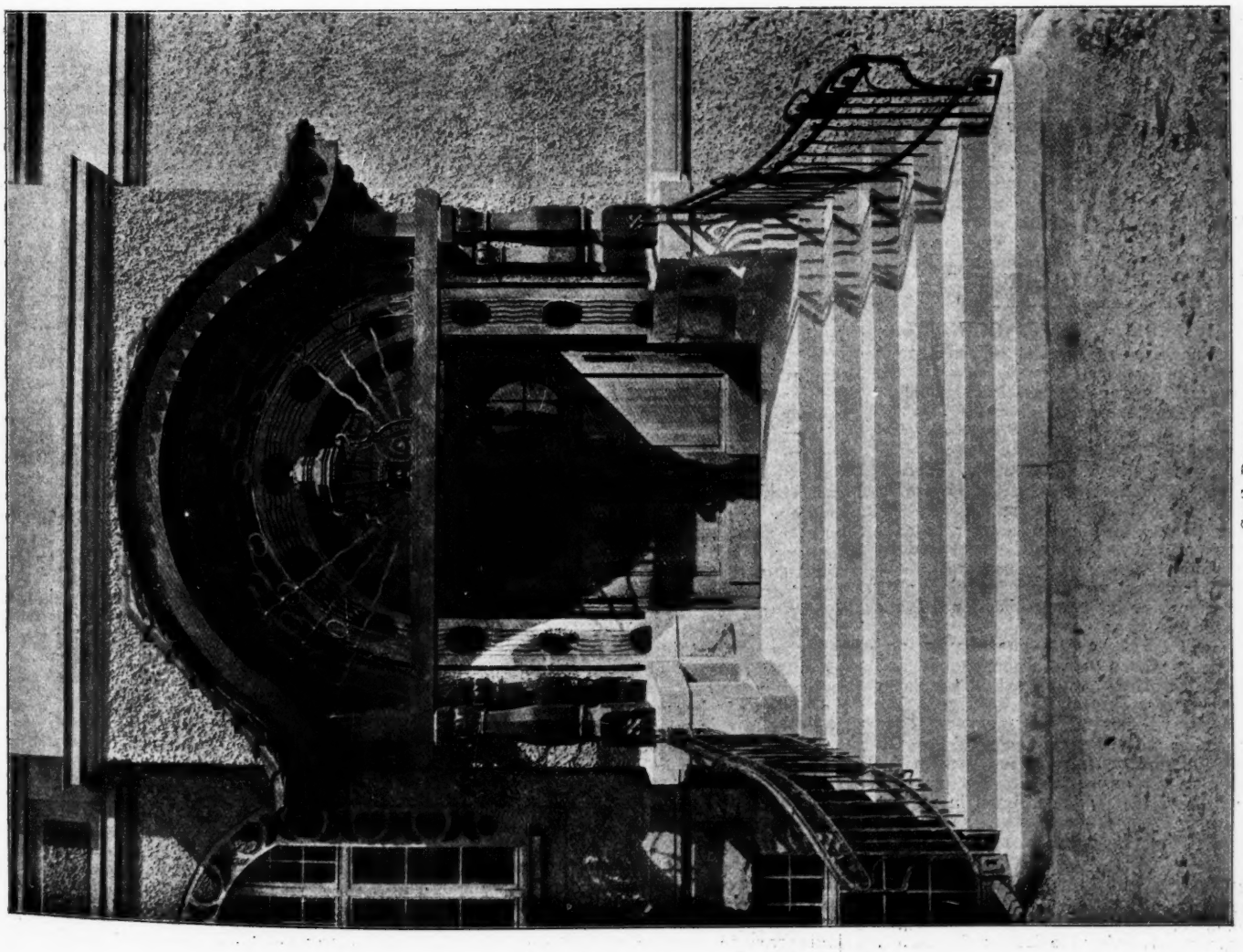
Mr. T. P. Sykes, President of the Union of Teachers, said they needed more ventilation in the schools. At the present time a public elementary school was compelled to afford each pupil 8 cubic ft. of air space, but in a secondary school 16 ft. had to be provided, and he could not see why this difference existed.

ENTRANCES TO A SCHOOL IN HALLE.

THESE two entrance doorways, which are rather characteristically treated, are reproduced from two illustrations in the *Architektonische Rundschau*. Herr Rehorst is the architect.



West Doorway.



South Doorway.

Two Entrance Doorways to a School in Halle. Herr C. Rehorst, Architect.
(From the *Architektonische Rundschau.*)

THE SURVEYORS' INSTITUTION.

An ordinary general meeting of the Surveyors' Institution was held on Monday last at No. 12, Great George-street, Westminster, Mr. George Langridge, President, in the chair. The minutes of the last meeting having been read and confirmed, and some donations to the library and library fund announced, the adjourned discussion on the paper read on February 25 by Mr. Aubrey J. Spencer on "The Agricultural Holdings Act, 1906," was resumed.

Mr. H. Herbert Smith said that in his practice, extending over thirty years, as land agent, he had up to the present time not had a single case under any Agricultural Holdings Act. He was of opinion that there was no need for the Act under discussion, and a great many agriculturists were not even aware of its existence. Some legislators had an idea that the landlord was a person who tried to secure everything he could and to escape any contribution, but they should realise that the landlord and the tenant were partners in the business, the landlord finding four-fifths of the capital in land and buildings and the tenant one-fifth in stock and implements. Any partnership to be successful must be endowed with the mutual goodwill of the principals, and he hoped that the measure under consideration would not disturb the harmony which had existed between landlord and tenant for so many years. The landlord ought to keep the buildings in repair: they were a necessary part of the farm, and the tenant should be repaid his expenditure on repairs. Formerly, agriculture in England held a very high place, but of late years it had fallen on evil times. He questioned, however, whether any real benefit arose from such legislation.

The speakers who followed discussed at some length the suggestion that the Act of 1906 would necessitate the issue of notices to quit and the framing of new agreements, the general opinion expressed being that, although in some special circumstances such a course would be advisable, there was no obligation to follow it, and it would be far more convenient in the majority of cases to allow the existing agreements to stand. It was pointed out that the Act would probably stir up grievances which would otherwise have been allowed to pass, and would also raise the question of an arbitrator where none was wanted.

The President having intimated that it would be impossible to complete the discussion that night, Mr. Sabin moved that it be adjourned, and Mr. Spencer then briefly replied.

The proceedings terminated with the announcement that the discussion would be continued on a date to be fixed later, and that the next meeting would be on April 8, when Mr. W. Vaux Graham would read a paper on "Underground Water, and Recent Legislation Affecting Water Rights."

THE LONDON COUNTY COUNCIL.

An ordinary weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Mr. H. Percy Harris, Chairman, presiding.

Contract for Erection of Streatham Car-shed (Second Portion): Sub-letting.—The Highways Committee recommended, and it was agreed, that Messrs. J. & C. Bowyer be allowed to sub-let to Messrs. A. C. W. Hobman & Co., of Bermondsey (or to such other person or firm as may be approved by the architect under the contract), the granolithic paving work in connexion with the erection of the second portion of the Streatham tramways car-shed.

Lack of Employment.—The Parks and Open Spaces Committee recommended, and it was carried after discussion, that the Parks and Open Spaces Committee be authorised to offer works at parks, gardens, and open spaces under the Council's control to the Central (Unemployed) Body for London for execution on the understanding that no payment will be made by the Council in respect of the works.

Oxford University.—A tablet has been set up in the Examination Schools to commemorate the foundation of the Cecil Rhodes Scholarships in the University. We understand that the tablet was executed after the designs of Mr. T. G. Jackson, R.A.

Architectural Societies.

Sheffield Society of Architects.—At the monthly meeting of the Sheffield Society of Architects and Surveyors, held on the 14th inst. at the Society's Room in Leopold-street, Mr. C. F. Innocent lectured upon "The Architectural Treatment of Metal-work." Mr. W. C. Fenton, Vice-President, was in the chair. The lecturer said the metals chiefly used by the builder were iron and lead, and both had been mined in this district from the beginning of the historic period. Evidences of the early working of lead and iron remain all over the neighbourhood, and in the Little Don Valley were slag heaps so old that all memory of their origin had been lost. Carvings of blacksmiths' tools on Saxon crosses, as at Leeds Parish Church, showed that the tools were the same a thousand years ago as they are to-day; a Saxon carving at Halton of Regin forging a sword for Siegfried was probably the oldest illustration in England of a smith at work, and some of the tools were precisely the same as may be seen in use in Sheffield to-day. There is surprisingly little of old wrought ironwork in this district; the early XVIIth century railings round the Scott tomb in Ecclesfield Church were an interesting example, and Mr. Innocent conjectured that they were designed by a Netherlander who had been to Venice. A great impetus was given to the designing of wrought ironwork by the arrival in this country of a great French smith, Jean Tijou, in 1670, who later did work at Chatsworth. The earliest use of cast-iron, architecturally, in the district appeared to be in fire-dogs; towards the midle of the XVIIIth century the old open fireplaces were superseded by cast-iron stoves, and great numbers of these still exist in Sheffield; they are excellent examples of design appropriate to the material, and some of them appear to be by the celebrated brothers Adam. Passing to lead, the lecturer alluded to the beautiful silvery appearance of old lead, which was due to its not having been de-silverised as was now done. It was said that there was nothing new under the sun, and the Romans used also to de-silverise the lead which they obtained in Derbyshire. Old lead was cast and not milled as modern lead, and the old plumbers took advantage of this to leave their names for the information of posterity, as may be seen upon the roofs of Sheffield Parish Church. On the old roof of Darnall Hall was the following:—

> This lead was cast for
> Mr. Samuel Staniforth as you may see 1723.
> Also ye truth you may hear
> This house was built in one year.
> John Clarke Plumer (sic).

And no doubt he plumed himself as much upon his verse as upon his plumbing. The lecturer pointed out that the designs in any material should always be appropriate to that material, and vary with the methods of manipulation. The lecture was illustrated by a large number of lantern slides.—At the conclusion a vote of thanks was accorded, on the proposition of Mr. C. F. Longden, seconded by Mr. W. J. Hall.

Leeds and Yorkshire Architectural Society.—At the rooms of this Society on Thursday, the 14th inst., Mr. P. G. Bankart read a paper on "Plaster Work," Mr. H. S. Chorley, President, in the chair. The lecturer said the task of condensing so immense a subject into the space of a few minutes was no light one. Plaster had so long been looked down upon, and perhaps rightly so, for its modern commonplace vulgarity of treatment that it seemed almost incongruous to think of it as a vehicle of art. The primary object of the decoration of a ceiling or of a wall was in all decoration the giving of pleasure to the eye. The construction of the ceilings has undoubtedly its bearing on the design. They had a method of constructing their modern plaster decoration by casting with fibre and wood, and this was a method of convenience. Whether the process itself was right or wrong was another matter; much of our modern construction called for it, and it had come to stay, at least for a time. Unlike the plaster work of the early centuries, which was a mere coating, their process is a casing. It would be a fatal error to suppose that the undulating surfaces of ceilings would have been then left had they been more skilful workmen. It did not follow that because the surface of a ceiling bulged or undulated it was altogether due to the negligence of the plasterer. All the crafts were alike in this respect. Joists were then cut and shaped by hand, and unevenly laid and irregular of surface when lathed over. Walls were irregular also, roughly built, and in the early times the plaster followed suit. Their materials were prepared and mixed as they had been mixed for centuries, and in its application they relied very largely on doing the best they could with the freedom of the hand and the judgment of the eye rather than on the over-exactitude of the rule and measure. We must give credit, at any rate, for these men using plaster in a plastic form. He claimed for plaster at least that respect and technical liberty which were due from the artist to any other material or medium of expression, whether the surface of operation were large or small.—The lecture was illustrated by many fine lantern slides.

The Edinburgh Architectural Association.—On the 13th inst. Mr. F. C. Mears read a paper on "Revivals." In times of unsettled conviction, he said, revivals were attempted, not by architects alone, but also by workers in other branches of thought who admired and tried to restore to life certain features of a former age. Great architecture is of two kinds—that produced by a whole people expressing their highest ideals in their buildings, and that of a very rich people building magnificently and employing mercenary labour. The finest of sculpture and the other arts is an organic part of the former, while the latter is merely covered with rich detail. The motives of revivalists may always be traced according as they revert to one or the other of these types. The lecturer then traced the influence of the primitive building of East and West on even the most advanced work of later times, and gave examples of the unsatisfactory result of trying to combine the two kinds of work, *i.e.*, the architecture of great rivers and plains, of which Egyptian and Greek are types, and that influenced by the sea and mountains, which developed as Gothic. Of modern builders, the engineers best show this Western feeling in their works, which both on land and sea have a common quality of rightness, a quality necessarily lacking in revival work, which is obliged to compromise. With regard to the covering of the dry bones of engineering, it is worthy of note that modern painting and sculpture usually combine well with it, since all three are absolute expressions of natural fact, and it is probably that in this combination by the architect-engineers of the future, there may be the beginning of a new architecture which shall be true to its age.

The Architectural Association of Ireland.—A meeting of the Association was held on the 19th inst, the President, Mr. Joseph Holloway, in the chair, when Mr. F. Shaw read a paper on the "Evolution of Earthenware and Fireclay Goods." He dealt with the advance of sanitation during the last quarter of a century, which perhaps received its first impetus from the serious illness of his Majesty in the early seventies. Since that date many inventions had been patented in the direction of protecting the labourer in his cottage and the King in his palace from unsanitary surroundings. Sanitary ware should be designed so that all parts are readily accessible. Having described the process of manufacture, from the "slip" to the pressed and incorporated clay ready for the potter, the lecturer proceeded to explain the various methods of forming sanitary goods, the burning in the "biscuit" and "box" kilns, the application of the design, and the manufacture and finish of lead glaze.

Posters for the Edinburgh Exhibition.—The competitive designs for a poster to advertise the Scottish National Exhibition, to be held at Edinburgh in 1908, were adjudicated upon by the Executive Council on the 14th inst. Only sixty designs were sent in, two prizes being offered of 50*l.* and 20*l.* respectively. The first prize was awarded to Mr. Ford H. Ball, Nottingham, and the second prize was given to Messrs. M'Lagan & Cumming, Edinburgh. Designs by Mr. W. Kay Blacklock, Edinburgh; Messrs. Archibald & Fowler, Edinburgh; and Mr. R. Paton Brown, Bradford, were highly commended.

Builders' and Contractors' Column.

THE WORKMEN'S COMPENSATION ACT, 1906.

THE Workmen's Compensation Act, 1906, will come into operation on July 1 next, and as it is very essential that employers should, as far as the Act permits, understand their position under the law as altered and effect the necessary insurances before the Act comes into force, we propose shortly to consider this measure with especial reference to our readers' interests.

This Act repeals the existing Acts of 1897 and 1900, but the repeal is somewhat complicated by the terms of sect. 16 subsect. (2), which provides that the Acts of 1897 and 1900 shall continue to apply to cases where the accident happened before the commencement of the new Act, "except to the extent to which this Act"—*i.e.*, the Act of 1906—"applies to those cases."

The Act of 1897, it will be remembered, legislated with reference to particular undertakings, and there was a limit of locality, the classes of persons given the benefit of compensation being only within the Act when employed "on, in, or about" the selected undertakings. The point of the first importance to notice in connexion with the new Act is that it is of general application, and that there is no limit of locality. The curiously intricate problems afforded by the Act of 1897, such as whether certain operations constitute the premises a "factory," and what operations are an "engineering work," and the innumerable questions attendant on the use of a ladder and its conversion into scaffolding have all been swept away; but we much fear that their place will only be taken by others no less bewildering.

To ascertain what persons are within the Act it is now only necessary to consult the definition of "employer" and "workman" in sect. 13, and it will be seen that any person employed by way of manual labour, and any person employed otherwise than by way of manual labour whose remuneration does not exceed 250*l.*, is within the Act, except he be a member of a police force, an "outworker," or a member of the employer's family dwelling in his house. This extension of the Act is very widespreading, not only must those persons popularly termed "workmen" be insured, but also the clerical staff whose remuneration by commission or otherwise does not exceed 250*l.*, whilst messengers, porters, and domestic servants also fall within the definition, and the absence of any limit of locality widely increases the risks the employer is made liable to pay compensation for. So long as the employee is acting in the course of his or her employment, the employer is responsible; thus, a messenger sent to deliver a parcel or call a cab may be run over by a motor-car, and his employer be liable for a minimum sum of 150*l.* if his injuries prove fatal, and workmen on their way to or from their work may possibly be deemed to be acting within the employment. In the Act of 1897 the question generally was the determination of the limit of locality implied by the words "on or in or about" the undertaking, but under the new Act a crop of cases in the law courts will arise to determine when the employee is acting within or without the scope of his employment, and whether the accident arose out of the course of his employment.

So far we have only referred to those persons directly employed by their own employer, but other considerations arise where persons are lent or let out, and where persons are casually employed. In the definition of "employer" in sect. 13 a person temporarily lent or let on hire to another employer is to be deemed to be in the employ of that employer with whom he entered into a contract of service. A casual employment of a person is not to bring him within the Act as a "workman" if he is employed otherwise than for the purposes of his employer's trade or business. The Legislature can hardly have realised the effect of these provisions, and the uncertainty involved in construing them. During the passing of the Bill any opposition was silenced by the argument that the risks imposed could easily be insured against at a very low premium, an argument of some force if the Act was clearly expressed so as to leave employers in no doubt as to what employees would be within its scope; but who can at present define what liabilities he is under in regard to casual labour? A messenger employed for an hour or two to deliver circulars, if he be paid direct and is on his own account, may render the person employing him liable in case he is run over and killed to pay his dependants 150*l.*, if he is injured the weekly payments which may have to be continued for his life are, moreover, not to be assessed on the sum actually paid him by the person then employing him, but upon his earnings under other employers by whom he also was engaged at the time of the accident. A typewriter engaged for a job, unless engaged through some institution who pays her, will be within the Act, and a "runner" who follows a cab and carries a commercial traveller's samples upstairs can only be engaged at a risk of 150*l.* if he falls downstairs and breaks his neck. Has not the theory of compensation run rampant? The employer of casual labour has to decide two questions before he engages anyone: (1) Is he employing him for the purpose of his trade or business? (2) how is he paid? It would appear that in the case of casual labour no logical inclusion or exclusion of persons has been attained since the casual hand employed not in connexion with his employer's business is to be excluded, and examples have been cited in the Press showing how curiously the Act will operate—a messenger employed to deliver a parcel from a shop will be within the Act, whilst a messenger carrying the same employer's personal luggage will be outside it; a caretaker in the office may be within the Act, but similarly employed at a private residence outside it, and so on.

The liability of employers has not only been extended to all classes of employees, but under the new Act it has been increased in other ways. Hitherto no liability has attached to the employer for the first two weeks of incapacity of his workman from injury arising from accident, and all compensation to injured workmen has commenced to run after the first fortnight; but under the new Act compensation is only not payable to workmen whose incapacity does not exceed a week, if the incapacity lasts less than two weeks compensation is not payable in respect of the first week, but when the incapacity continues for more than two weeks compensation is payable from the date of the accident. The classes of persons entitled to compensation under the former Acts were generally persons engaged by the week, and hence their right to wages under their contract had ceased before the fortnight had elapsed, during which compensation was not payable. The new Act embraces persons engaged under monthly contracts, or, in the case of clerks and superior officials, even three-monthly contracts, and some difficulty will arise in determining where their right to wages under their contracts will cease, and their right to compensation commence, and this difficulty will be especially apparent in the case of domestic servants, who have hitherto received their wages and board and medical attendance even when incapacitated.

Another important innovation is the liability of employers to pay compensation when the accident which is the cause of death or injury is solely attributable to the serious and wilful misconduct of the employee. Under the previous Act these words had received a very limited interpretation, and shortly stated the misconduct must have been of such a character as would render a servant liable to instant dismissal (Johnson *v.* Marshall & Sons, House of Lords); but if the misconduct could be proved by the employer it deprived the workman of the right to compensation. Under the new Act a workman guilty of serious and wilful misconduct is to be compensated by his employer provided the injury caused by his own wilful misconduct "results in death or serious and permanent disablement." It is hard to justify the incentive thus offered to employees not only to be careless—for that was not sufficient to amount to serious and wilful misconduct under the former Act—but to be wilfully disobedient. An employer may make rules for the safety of his employees, he may give express directions that condemned machinery must not be used, but it is to be of no avail. The workman may endanger the lives of other workmen engaged on the operation, and render his employer liable to compensate others injured by his own criminal neglect, and all the same receive compensation himself for having set his employer at defiance. Having regard to the effort made by the Legislature during the past few years to secure the safety of workmen, it is inconceivable how sanction can have been obtained for a piece of legislation of this character which not only discourages employers from taking precautions to secure safety for their workmen, but directly tends to endanger the lives of fellow-workmen by encouraging disobedience and wilful neglect.

Our space compels us to hold over the considerations of the important questions connected with industrial diseases, and the position of sub-contractors, questions of considerable interest to the building trade.

CEMENT USED IN SOME RECENT NAVAL DOCKS.

Since the inauguration of the programme of dockyard extension, which was carried nearly to its close by the Naval Works Loan Department, no less than 772,500 tons of Portland cement have been used in the execution of the five largest projects, as follows:—

	Tons.
Keyham Dockyard Extension ...	235,000
Gibraltar Dockyard Extension ...	214,500
Hong Kong Dockyard Extension ...	60,000
Dover Harbour	263,000

As the dockyard extensions at Simon's Bay, Hong Kong, and the National Harbour at Dover are not yet completed, it is probable that the total consumption will not be far short of 1,000,000 tons.

THE EXECUTION OF CONCRETE-STEEL WORK.

Recent failures of concrete-steel buildings during construction in the United States and on the Continent show how important it is that the contractor should recognise the necessity for strict compliance with the working drawings, and that he should possess such knowledge as will enable him to guard against defects of workmanship and constructive methods that involve the most serious risks.

In the following notes we mention a few points that may be found of service to contractors about to undertake the execution of work in concrete-steel:—

All Portland cement used should be of the best British make, purchased to an approved specification and tested to insure compliance therewith. To buy spurious foreign imitations is to invite disaster.

The sand should be sharp and free from earthy matter; gravel must be carefully washed; if broken stone is adopted it should be free from incipient cracks; ashes and refuse should be removed from clinker specified as aggregate.

Thames ballast must never be used without separation of the sand and gravel, which can then be mixed in correct proportions.

Aggregate should be graded so that no stones or fragments are greater in diameter than about one-third of the distance between the bars of the reinforcement, or between the latter and the sides of the moulds.

If the aggregate is too coarse there will be a risk of empty spaces in consequence of arching, especially when broken stone, clinker, and brick are used.

The proportion of water should be such as to give a fairly wet concrete which can be readily worked in between the bars of the reinforcement. If too much water is used the effect may be prejudicial to the bond between the reinforcement and the concrete.

For wall surfaces a fairly dry mixture is desirable to avoid reproducing the surface defects of the mould and the grain of the wood.

Concrete must be used before it has begun to set, otherwise the cement will be "killed." In depositing concrete do not suspend work until the whole section taken in hand has been completed. When work for the day is finished the edge left should be clean cut and vertical, so that a sound joint may be made between the old and the new concrete. Before new work is added the previously deposited concrete should be thoroughly

wetted, and the surface roughened to give a good bond. The concrete in beams and the connected slabs must be uniformly rammed, or cracks may be formed at the junction.

The concrete should never be tipped in large masses, the proper course being to deposit small quantities at a time with continual tamping.

Great care must be exercised in placing the concrete at the junctions between columns and beams. There are generally a good many bars at such points, and the risk of voids is one always to be guarded against.

It is a good plan to place a layer of mortar at the base of a column so that sufficient matrix may be provided for the stones which generally settle from the concrete in the layers above, particularly in the case of semi-fluid material. Similarly, an extra quantity of aggregate can often be put with advantage at the top of a column, where mortar or grout is apt to predominate.

In cases where wheelbarrows are used for delivering concrete from point to point on the upper floors of a building under construction, the tracks should be constructed with regard to the fact that continuous vibration is exceedingly prejudicial to the setting of the concrete work.

Too much care and supervision cannot be devoted to the disposition of the reinforcement in exact accordance with the working drawings. Tests conducted by the British Fire Prevention Committee have already shown that in sample floors constructed under the direct supervision of patentees, anxious to display their systems to the best possible advantage, some bars of the reinforcement were seriously displaced. Other cases have been known where groups of bars forming the tension reinforcement of beams were put close together without any concrete between them. In a recent American failure the workmen left out half the reinforcement of a most important column, and to hide their mistake put the omitted bars into an adjoining column in addition to the proper number. Such things can only be prevented by constant vigilance on the part of the clerk of works and the responsible foreman.

In columns it is easy to fix the vertical bars in the moulds so that displacement may be avoided. Then the lateral ties, having been previously threaded on the bars and drawn up to the top, can be slid down one at a time as required. But there must be efficient supervision, or careless men may forget a tie at the proper time, or attempt to cover the omission by embedding two ties at the next point.

In beams the lower bars must be carefully wedged above the bottom of the moulds, or placed upon a layer of concrete of sufficient thickness to keep the steel at the predetermined distance from the surface. All longitudinal bars must be perfectly straight, except where purposely bent to provide for continuous-girder action, and must be fixed parallel with the axis of the beam.

The contractor should be very particular to see that the end of all bars are split so as to afford satisfactory anchorage, and that sufficient length is allowed for the bars to be embedded into the concrete of the supporting and adjoining members. Equal care must be devoted to the temporary and permanent fixing of shear members which are very readily displaced during tamping, especially if disposed diagonally.

However carefully the reinforcement may be laid out and fixed in position, its beneficial effect will certainly be neutralised unless the concrete is carefully poked into all interstices and most thoroughly tamped. Lack of attention to this point was largely the cause of a serious collapse in America, and we may be sure that other failures will follow if similar neglect is displayed in future.

The period that should elapse before removal of the moulds and supports varies according to the properties of the cement, the treatment of the concrete, and atmospheric conditions. We have known cases where concrete employed in the open air has required months for settling, but in the ordinary way the moulds for concrete-steel columns, beams, and floors can be struck after the lapse of two or three weeks. Undue haste in this respect is always dangerous, and the point is one to which particular attention should be paid, as several of the failures that have already occurred are directly attributable to the premature removal of moulds and centring.

The greatest safeguards for the contractor are an experienced clerk of works or resident engineer appointed by the designer, an experienced general foreman, experienced foremen on all departments of the work, and experienced workmen. Whatever some people may say, mere labourers must not be entrusted with the execution of concrete-steel works, although their help is useful in its proper sphere.

FERRO-CONCRETE PILES.

When the recent judgment of the Lord Justices of Appeal in the action of Mouchel *v.* Coignet was first announced, it was believed by some who had followed the progress of the case that the reversal of the decision made by Mr. Justice Warrington in the Chancery Division would take away from the Hennebique patent of 1897 the character of a master patent controlling the construction and employment of reinforced concrete piles in the United Kingdom.

But, as the case will be carried to the House of Lords, its issue is still an open question. The point at stake is of far greater importance than is generally recognised. The action is not merely a fight between two rival patentees. The position is that, if the decision of the Court of Appeal should be overruled by the House of Lords, the plaintiff will continue to enjoy, for the unexpired term of his patent, a monopoly of reinforced concrete pile construction. On the other hand, should the ruling of the court below be upheld, the plaintiff and the defendant alike will suffer to some extent, for it will be permissible for anyone to make and use reinforced concrete piles, except those embodying special forms of construction which are protected by Letters Patent. Thus, it is evident that the ultimate fate of the present action involves consequences of unusual importance to the engineering profession.

As the action is still *sub judice*, we abstain from any comment upon the two decisions already made. We may point out, however, that while Mr. Justice Warrington took the view that the plaintiff had invented piles such as had never before been made or used, and was entitled to the benefit of his invention, the Lord Chief Justice and his learned colleagues held that the plaintiff had practically done nothing more than to discover that reinforced concrete members of the kinds previously used for other purposes could be used as piles, and that as "discovery," in contradistinction to "invention," was not patentable, the plaintiff could not protect his idea by a patent. The latter judgment was based mainly upon the construction placed by the Lord Chief Justice upon the language of the specification, wherein the plaintiff did not confine himself to a description of his alleged invention relating to piles, but went on to state that it embodied the principles previously applied to the construction of reinforced beams, and he referred also to the construction of uprights and standards. It is certainly desirable that piles should be able to resist flexure after the manner of beams while being handled or slung before being driven; it may often be convenient to use as a standard or column the upper part of a pile driven for a certain distance into the ground, and the utility of reinforced uprights and standards is very obvious. Whether these are supplementary and incidental advantages of the invention as Mr. Justice Warrington thought, or whether they constitute essential features of the alleged invention, whose suitability for use as a pile is a supplementary and incidental advantage, as the Court of Appeal thought, is a point on which we shall be enlightened in due course by the House of Lords.

In the meantime, patentees and patent agents may find in the recent judgment a strong hint as to the desirability of making perfectly clear the true nature and essential novelty of inventions described in specifications, and of avoiding the addition of descriptive matter or claims that may possibly lead to misconception and so defeat their own ends.

THE INTERNATIONAL BUILDING TRADES EXHIBITION.

The arrangements for this Exhibition are now complete. The opening ceremony will be performed at twelve noon on Saturday, April 6, by the Lord Mayor, Sir William Treloar, the vote of thanks to whom will be moved and seconded by Sir Aston Webb, R.A., and Mr. F. L. Dove, L.C.C., President of the Institute of Builders, respectively. The Exhibition will be open from 10 a.m. to 10 p.m. every weekday from Saturday, April 6, to Saturday, April 20, inclusive. The whole of "Olympia" will be taken up by the exhibits, gallery, main hall, and annexe having been allotted to their fullest capacity.

Books.

Modern Buildings, their Planning, Construction, and Equipment. By G. A. T. MIDDLETON, A.R.I.B.A., assisted by a specially-selected staff of Contributors; profusely illustrated, in six volumes. (London: The Caxton Publishing Company. 1906.)

AS FAR as we know, no such comprehensive book on the planning and construction of modern buildings has hitherto been issued. Five of the volumes are now before us, and it is therefore possible to form a fairly accurate idea of what the complete work will contain, and of what assistance it is likely to be to the young architect. Many books have been written on building construction, and on the planning of houses, flats, schools, hospitals, and other buildings, but we believe that this is the only book published within recent years in which an attempt has been made to deal with all these subjects. Mr. Middleton must be congratulated on having worked out a good idea with considerable success. Much of the matter appears to have been written by his own hand, but there are also many chapters which have been written by "specially-selected contributors."

The first volume consists of three parts, the first dealing with office practice and draughtsmanship, the second with the planning of cottages and country houses, and the third with ordinary constructional details, which, curiously enough, is printed on the title-page as "Ordinary Constitutional Details."

In the first part Mr. R. W. Carden, A.R.I.B.A., writes on the preparation of working drawings, and gives a number of useful hints, while other chapters deal with ornamental lettering, the surveying of existing buildings, etc., and in the last chapter of this part a short model specification is given for three labourers' cottages, of which the plans and quaintly-drawn elevations, designed by Mr. A. M. Peart, appear in Plate 4 (not Plate 5, as stated in the text).

The second part, dealing with cottages and country houses, contains numerous examples designed by various architects, including Messrs. Barry Parker & Raymond Unwin, Mr. G. A. T. Middleton, Messrs. Hubbard & Moore, Mr. Reginald Blomfield, A.R.A., Messrs. Thomas & Percy Scott Worthington, Mr. John Belcher, and others. On the whole the examples are well chosen, and range from the small week-end cottage to the large country house; but some of the designs are not above criticism. A country house, which does not appear to have been built, is shown by plans and elevations in Plate 1; the general arrangement of the rooms is worthy of praise, but, although the house is large, the passage leading from the hall to the kitchen is about 27 ft. long and only 3 ft. wide between the brickwork, and has no light except through glazed doors. The passage of the same width on the first floor is nearly 40 ft. long, and has no light for the greater part of its length except through glazed doors. In two of the bedrooms the fireplaces are too near the doors, and the cloakroom on the ground floor has no light except a borrowed light. For a house of this size a separate wine store, and probably also a beer store, would be necessary, and a fireplace in the pantry would have been an improvement. On the first floor there are two bedrooms at the south end of the building, one having a range of windows on the west, and the other on the east, but additional windows on the south side at the inner ends of the rooms near the fireplaces would have been an improvement.

The only reason that we can suppose for the insertion of the plans and elevation of the proposed country house shown in Fig. 43 is that they are inserted as examples of how not to design such a house. Probably the architect was asked to provide a certain number of rooms at a certain cost, but this is a difficulty which architects are often called upon to face, and which must be met by careful planning and by economical construction. In this case the designer has shown external walls 14 in. thick, and nearly all the internal walls 9 in. thick, and has wasted space in the "square" hall and landing, and placed a lavatory basin in every bedroom, involving great expense in plumbing and drainage. The result of all this extravagance is shown in the ridiculous sizes of the rooms—dining-room 15 ft. 6 in. by 10 ft. 6 in., library 10 ft. 6 in. by 7 ft. 6 in., drawing-room 16 ft. 9 in. by 10 ft., best bedroom 15 ft. 6in. by 10 ft. 6 in., and so on. A house 20 per cent. larger, carefully designed, could be built at the same price. Among the defects of the plan we may point out that the larder has a window facing due west, and the east end is formed by the back wall of the kitchen range; a very little thought would have rectified this defect. There is neither a back staircase, nor a housemaid's closet, nor a pantry.

Part three, on Construction, has been contributed mainly by Mr. H. Y. Margary, and contains chapters on soils and foundations, timbering to excavations, bond in brickwork, footings, copings, hollow walls, flues and chimneys, arches, terra-cotta, concrete walls, stone walls, scaffolds, gantries, centres, carpentry, floors, partitions, roofs, etc. Special reference may be made to the chapters on brickwork, the illustrations being very clear and comprehensive, and including many examples of brickwork not given in the usual text-books; nothing, however, is said about brick vaulting. It is somewhat curious to find that the author recommends plank foundations for soils with a small bearing capacity, and makes no mention of reinforced concrete, which is now more usually adopted under such circumstances. This subject is, however, treated in a later volume by another contributor. The same part contains also chapters on rudimentary masonry by Mr. W. Hooker, on shoring, needling, and underpinning by "the Editor," and on lead, zinc, copper, and asphalt roofs by Mr. T. H. Bishop.

The second volume, like the first, is divided into three parts, the first of which deals with town houses, shops, and offices, the second with specification writing and quantity surveying, and the third with the constructional finishings of the building. Among the town houses are examples by Messrs. Ernest George & Peto, Mr. Reginald Morphew, and others. There are also examples of small suburban houses, and for these, presumably, Mr. Middleton must be held responsible, although no name is attached to the drawings. On page 18 two examples are given, neither of which can be considered entirely satisfactory. The fireplace in the dining-room of Fig. 12 would be much better across the corner of the room instead of on one side close to the angle. This house is one of a pair of semi-detached houses, and the scullery doors are close to the party-walls on the garden side of the houses, and access to these doors by tradesmen and others could only be obtained by crossing the garden in front of the drawing-room windows, unless a back street abutted upon the garden, of which, however, there is no mention in the text. In Fig. 13 a nursery is shown on the first floor without any fireplace, although it could easily have been arranged, as the copper flue runs up the corner of the room.

Plate III. gives a design for a draper's shop on a rectangular site, and a specification for this building, anonymously contributed, is given in the first chapter of part two of this volume. The plan of the building is open to criticism in several respects; for example, there is only one bath and no slop-sink on the third floor, although there are twenty bedrooms; two water-closets are provided on this floor, but one of them is entered from the bath-room, and, as far as one can see from the plan, the access to the coal-store and heating-chamber in the basement is not all that could be desired. The back wall of the building is vertical, no advantage being taken of the provisions in Building Acts, which allow the lower stories to be projected towards the rear of the open space; such a building would, therefore, be a very expensive luxury on a costly site. The specification is not complete, and would undoubtedly involve a considerable number of extras. Dowels are not specified for the stone balustrades. Some of the mahogany is specified to be French polished, but for the stallboards, window linings and newels, polishing is not mentioned. The rain-water pipes "where shown" are specified to be stout cast-iron, but two which would be required on the front elevation are not shown, and if the pipes are intended to be carried down inside the building, lead would be a better material than cast-iron. With reference to the "hot-water engineer," a 50-gallon cylinder, heated by the boiler in the kitchen range, is supposed to supply sufficient hot water for kitchen use and for the baths and lavatories for forty employées, and, presumably, also for the retiring-rooms for customers. No draw-off is specified from the boiler, and the safety-valve is specified to be fixed on the cylinder and not on the boiler; the cylinder and pipes are not specified to be wrapped with non-conducting material; and although a heating-chamber and boiler are shown in the basement, no apparatus is specified, and no provisional sum included. The main pipe to the cistern is specified to be 1 in. in diameter, but the lead safes under the cisterns have waste pipes only $\frac{3}{4}$ in. in diameter. Waste pipes are not specified from the baths, and no traps are mentioned, but these will doubtless be included in the price of the baths; no material is given for the anti-siphonage pipes, and the tiles are not specified to be laid in cement. A flat round the lantern light in the centre of the building is to be of concrete, but we cannot find any reference to an asphalt or other covering over it.

Mr. W. H. Brown writes clearly and in considerable detail on quantities, and gives examples of various methods of taking-off, abstracting, and billing.

Part 3, on constructional finishings of the building, contains chapters on joinery by Mr. H. Kennard. We note again the old error that the pitch-pine, which is used in this country, is obtained from the "Pinus Rigida." This tree does furnish a certain amount of wood which is known as pitch-pine, but the pitch-pine used in this country is the wood which is known in the United States as yellow pine, and is obtained from trees of three or four different varieties. It is somewhat surprising that bass-wood is not mentioned among the hardwoods which are now in common use in this country. Mr. Kennard writes clearly, and in a practical way, and gives many examples of doors, windows, mantelpieces, and other joinery.

Three chapters on plumbing and drainage, and one on glazing, are contributed by Mr. T. H. Bishop, and while much of the information given is correct and useful, it is not complete and not without faults. Interception of the drain from the cesspool in Fig. 195 would have been better if effected in an intercepting chamber, as the drain is too deep to allow the trap to be conveniently cleared by means of the pipe-shaft shown. The chapter on sanitary fittings and their plumbing cannot be regarded as a satisfactory piece of work. It is not always the case that the water supply to a valve-closet is "wholly dependent on the person using it, the water running as long as the handle is held until the cistern is emptied." In the paragraph on wash-down closets, the author says that it is better to have the trap and basin in separate pieces, and gives as an example of this class of closet, Doulton's *Simplicitas*, which has the trap and basin in one piece. The types of closet with lead half-traps and the joints below the level of the standing water are not mentioned. Nothing is said about the different kinds of enamel for cast-iron baths, and the overflows illustrated are condemned by many water companies. The type of overflow for lavatories shown in Fig. 206 is most objectionable, and so is that of the urinal, shown in Fig. 209. Butler's sinks lined with lead and with the seams (as the author suggests) merely welted, would certainly not be watertight. In the chapter on glazing we are told that British polished plate-glass is made in sheets from $\frac{3}{32}$ in. to $\frac{1}{4}$ in. thick. Any catalogue would have shown the author that there is a much wider range of thicknesses than this. Additional chapters on bells and bell-hanging, and on plastering, are contributed by Mr. H. Y. Margary.

In Volume III., Part 1, on school and hospital planning contains examples of schools of various sizes from the designs of Mr. B. C. Andrew, Mr. J. W. Donald, Mr. H. P. Burke Downing, Messrs. Crouch & Butler, Mr. A. W. S. Cross, Messrs. Treadwell & Martin, and others; and designs for hospitals by Mr. H. Percy Adams, Mr. J. C. T. Murray, Mr. H. J. Marten, Mr. Thomas W. Cutler, and Mr. Thomas H. Bishop. The details of the fittings in the laboratory and chemical lecture theatre at the Manchester Municipal Technical School are particularly interesting.

Mr. J. Bridges-Lea, M.A., Barrister-at-Law, contributes six very useful chapters dealing with law and easements, including light and air and support. These form Part 2. of this volume. Part 3 on heating, ventilation, and lighting is nearly all written by Mr. Middleton or by anonymous contributors. The chapters on domestic hot-water supply, although good as far as they go, are not by any means complete, and it is somewhat curious that neither in these chapters nor in those dealing with low-pressure hot-water heating apparatus is anything said about the necessity for using safety-valves. The author illustrates various systems of piping and of connexions to radiators for ordinary low-pressure work, but does not say anything about the more modern methods of forced circulation, nor does he describe the different kinds of boiler now in common use. Chapters on high-pressure hot-water heating apparatus, and on steam-heating apparatus, are also given, and contain much useful information. The chapter on ventilation includes a description and illustration of the system of mechanical ventilation adopted in the infants' department of a Board school at South Shields. A chapter on grates and stoves does not exhaust the subject, and would have been all the better if reference had been made to the tests recently carried out by the Smoke Abatement Society.

Mr. W. Noakes contributes two short chapters on gas-fitting, gas-lighting, and heating, and there is another on acetylene lighting; nine well-illustrated chapters on electric lighting are contributed by Mr. H. Y. Margary, and a final chapter by Mr. H. Luttrell Godden on oil-gas.

Volume IV. is perhaps the most interesting and useful of the series, as it contains two excellent treatises by Mr. P. R. Strong on steel construction and fire-resisting construction. The first part of the volume, however, consists of five chapters dealing respectively with public libraries, baths, small municipal buildings, law courts, and large municipal buildings. The illustrations include libraries by Messrs. Poyser & Savidge, Mr. S. D. Adshead, and Mr. A. W. S. Cross; baths by Messrs. Treadwell & Martin, Messrs. Dreury & Dolby, and Mr. E. H. Payne; the Cardiff Law Courts, by Messrs. Lanchester, Stewart, & Rickards; and the Municipal Buildings at Sheffield by Mr. E. W. Mountford, at Walsall by Mr. J. S. Gibson, and at Lambeth by Messrs. Warwick & Hall.

We can merely indicate the subjects discussed by Mr. Strong in his treatise on steel construction. All the chapters are fully and clearly illustrated, and numerous stress diagrams are given. Among the subjects are beams, rolled steel joists and plate girders, pillars and stancheons, framed structures, roof trusses, steel framework of buildings, and steelwork in foundations. Numerous photographs are given showing different details of the steelwork at the Ritz Hotel, Piccadilly, and floor plans of the same hotel are given, with all the steel carefully shown and dimensioned to a small scale. The chapter by Mr. H. Y. Margary on wooden beams and pillars does not take into consideration the extensive series of experiments carried out by the Forestry Department in the United States. This chapter is followed by Part III., on fire-resisting construction, by Mr. Strong. The subject is treated in four chapters as follows:—The general principles of fire-resistance; horizontal divisions; vertical divisions; stairs and external risks, and warehouses. A final chapter deals with sprinklers and other provisions for the extinction of fire, automatic fire-alarms, etc.

The first part of Volume V. contains examples of ecclesiastical buildings of various kinds by Mr. P. A. Robson, Mr. C. E. Bateman, Messrs. Nicholson & Corlette, Mr. E. Goldie, Mr. J. S. Gibson, Messrs. Bradshaw & Gass, and others; and a special chapter on mortuary chapels and crematoria, by Mr. A. C. Freeman. Part II. contains five interesting chapters on armoured concrete, by Mr. P. R. Strong; eleven well-illustrated chapters on masonry, including vaulting and domes, tracery, stairs, etc., by Mr. Walter Hooker; and one chapter, by Mr. E. H. Hawkins, on the theory of arches, vaults, and buttresses. Part III., by an anonymous contributor or by Mr. Middleton, is entitled "The Duties of Clerks of Works"; and Part IV. consists of a series of chapters, by Mr. R. J. Haddon, on Australian planning and construction, which is illustrated by numerous examples of public and private buildings designed by Mr. A. M. Blackett, Mr. G. B. Leith, Messrs. Oakden & Ballantyne, Mr. R. S. Dodds, Mr. G. Sydney Jones, Messrs. Sydney Smith & Ogg, Messrs. Tombs & Durdan, Messrs. Garlick & Jackman, Messrs. Sulman & Power, Messrs. Reed, Smart, & Tappin, Mr. T. M. Sapsford, Mr. Peter Kerr, Messrs. Smith & Johnson, and other Australian architects.

We do not know what the contents of the sixth volume will be, but from the synopsis issued by the publishers we are led to believe that it will include examples of theatres, warehouses, factories, farm buildings, etc., and also articles on building construction and design in other colonies than Australia.

The preparation of this book has evidently involved a great amount of labour, and, while the contributions are not of equal merit, the book as a whole is one which can be heartily recommended to the student. It is admirably illustrated, many of the plates being coloured, and is clearly printed and well bound.

Practical Wood-Carving: A Book for the Student, Carver, Teacher, Designer, and Architect. By ELEANOR ROWE. (London: B. T. Batsford. 1907.)

MISS ROWE has followed up her two small handbooks, "Hints on Wood-Carving" and "Hints on Chip-Carving," with a more important work. As an acknowledged expert in carving, and as head of the School of Art Wood Carving, South Kensington, for twenty years, Miss Rowe speaks with authority, and we can very confidently recommend her book to students, teachers, and followers of this art. It shows a width of outlook and a grip of the whole subject not often shown in handbooks of the lesser arts. There is for the intelligent student a note of warning against regarding the decoration of useless objects as the end and aim of wood-carving. Instead of exalting milking-stools and overmantels into works of art, she would have a wider view of its possibilities impressed upon the mind of the student—the view which the old craftsmen took when the art of architecture and the lesser crafts were much more nearly alied than is the case at the present day. That is the point of view the student must have in mind; without hoping to get back the conditions obtaining in the XIIIth century, it is in something of the spirit of that time that the work must be approached. Perhaps this is the one fault of the book, that it does not sufficiently illuminate the romance surrounding the works of craftsmen of the XIVth and XVth centuries. The wood-carving of the Renaissance, useful and beautiful as it is, is never going to hold the individual student in the way of that done in mediæval times; and it is enthusiasm that must be aroused if the technique of a difficult craft is to be mastered by the student, who too often takes it up only in a casual way. Some of the XIVth and XVth century chests in our museums and in the Louvre are little historical romances in themselves—a standard of work which it is well to have in mind. The illustrations of old work are numerous, and specially well chosen for various characteristics. One of the best illustrations of pattern is given on page 43, a sample of paterns, the outcome of simple tool cuts; there are suggestions in an endless variety of ways, and will be found at the root of nearly all the simpler forms of carving of the best periods. Diagrams showing the tools, how to hold, sharpen, and grind them, how to join up and construct simple pieces of furniture, like doors and chests, all make the volume invaluable to beginners and students who have or have not the advantages of able tuition at hand. The architect, too, should welcome the book for its illustrations and historical treatment; it is, besides, lucidly written by the author, and admirably got up by the publisher.

Portfolio of English Cathedrals. No. 28—Ripon. With Historical and Architectural Notes by ARNOLD FAIRBAIRNS. (London: Dennis & Sons, Ltd. 1907.)

THE Cathedral Church of Ripon, notwithstanding its comparatively small scale, exhibits a very complete series of examples of the gradual development of mediæval church architecture. The so-called crypt of St. Wilfrid's early church dates from the VIIth century, and there is Norman work in the central tower and crypt of the chapter-house, an early English west front, and interesting remains in the nave; transitional work in the transept and choir, and a fine decorated presbytery. The nave is of XVIth century work, very good for its date. Among the most interesting details in the church are the canopied choir stalls, the rood screen, the tombs in the north transept, and a curious incised stone in the south aisle of the nave. Most of the architectural features of the building are well illustrated in the eight photographs given, and concisely described in the author's notes.

COURT OF COMMON COUNCIL.

A MEETING of the Corporation was held at the Guildhall on Thursday last week, the Lord Mayor presiding.

City Monuments.—Mr. Deputy Millar Wilkinson asked the chairman of the Streets Committee if he was aware of the dirty condition of some of the city statues, and if steps could be taken to have them cleaned. Mr. Stopher undertook to bring the matter before his committee. Mr. Domoney stated that the statues within the jurisdiction of the City Lands Committee were cleaned every three months.

Street Improvements.—The Improvements and Finance Committee submitted arrangements, which were adopted, for acquiring the leasehold interest of No. 7, Mansell-street, for the sum of 675*l.*; for acquiring the leasehold and trade interest of No. 34, Little Britain, for the sum of 1,000*l.*; and for acquiring the freehold interest in the ground needed to widen the public way in front of No. 59, Fleet-street, for the sum of 4,400*l.* The same committee also submitted the award of Mr. C. A. Lang for the ground required to widen the public way in front of Nos. 118 and 120, Fleet-street, for freehold interest of which 752*l.* 16s. was awarded, and for leasehold interest, of which 795*l* 15s. 2d. was awarded.

Recommendation of a Jury.—The Lord Mayor laid before the Court a letter from the Coroner for the City of London, reporting the result of an inquest held by him in regard to a fire on the premises, Nos. 10, 11, and 12, Wood-street, Cheapside, giving the jury's verdict, and a rider to the effect that they found that match-boarding seemed to be a source of great danger, and suggested that in all new buildings this mode of covering party walls be abolished; likewise that all electric wires should be encased in metal tubes.

Royal Sanitary Institute Conference.—A letter of the secretary of the Royal Sanitary Institute, relative to the conference of the Institute to be held in Dublin in June next, and inviting the Corporation to appoint delegates to the conference, was referred to the Port of London Sanitary Committee.

Fifty Years Ago.

FROM THE *Builder* OF MARCH 21, 1857.

MEDIÆVAL ARCHITECTURE.

STRONGLY as I appreciate the intrinsic beauty of the monuments of classic antiquity, and the merits of very many works of the Revival, I should doubt whether it were possible for any unsophisticated youth, before studying their architecture as a science, to entertain towards its productions in this country any feelings bordering upon real affection. He may see in them much to admire—much to lead him to study the art which has produced them; and this study will, no doubt, often kindle those warmer feelings which ripen into love; but this is a very different feeling from that deep and filial affection which many a youth, untaught in art, but gifted by nature with a perception of its beauties, has entertained from his tenderest years towards the old churches of his neighbourhood, and which has impelled him to walk from village to village, not only under the balmy influences of summer, but along muddy roads or snowy paths; and with glowing heart but shivering hand to sketch the humble porch, the unaspiring steeple, and the mutilated though venerable monument, with feelings of indescribable delight.

It is this instinctive affection which it is so difficult to reason upon, and to which cold investigation seems so uncongenial; yet most pleasant it is, in after life, to find ever new proof that our early feelings have not been misplaced; that those once callous warm up when they are led to examine; that those who, strange to say, disliked the architecture of their forefathers are now forced to admit some of its beauties; that the style, once despised, has become gradually appreciated, and its study become the favourite pursuit of thousands, every county having its society organised to promote it; that in every country in which it once flourished (France herself not excepted) the same revived feeling towards it has arisen; and, finally, that this distinguished academy has stamped it as equally classic with the architecture of the ancient world, and admitted it to an equal place in the instructions offered to her students.—Royal Academy Lecture by Mr. G. G. Scott.

*** It is almost pathetic to read this now, and to reflect that this warm enthusiasm for mediæval architecture as opposed to classic, which Scott evidently regarded as a permanent feeling, has all but died a natural death during the lapse of a half-century. On the other hand, the "want of real affection" for the monuments of classic architecture can no longer be a subject of reflection.—ED.

Illustrations.

OFFICES OF THE "HAMBURG AMERIKA LINIE."

THE illustration represents the rebuilding of the London offices of the Hamburg Amerika Line in Cockspur-street. The site comprises Nos. 14, 15, and 16 in that street, and the Company's office has been recently shifted from 16 to 14, which has been temporarily fitted up for their occupation during the rebuilding.

The site extends through to Warwick House-street at the back. The upper floors will be let as offices.

The building is being erected by the Waring-White Building Company, Ltd. Messrs. Widnell & Trollope, of Westminster, prepared the quantities.

Subsequent to the sudden death of the late Mr. H. W. Stock, Mr. Arthur T. Bolton was appointed architect, in association with Messrs. Stock, Page, & Stock, and has been carrying out the work.

HORNTON COURT.

THIS large and dignified block of buildings, near High-street Station, Kensington, is built of Portland stone for the ground story; the upper portion is in red brick (supplied by Messrs. Cullis & Co., Acton) and white stone (Palotte). The carving is by Mr. G. Hawkings. The steel work was carried out by Messrs. Morelands.

The roof-garden over the shops on the ground floor is laid out with York stone and red tiles, bay and other trees being placed in position in tubs.

There are about forty-five flats of various plan and accommodation. The whole of the ground floor is occupied by business premises.

The architects are Messrs. F. S. Chesterton and J. D. Coleridge. The drawing was exhibited at the last Royal Academy.

PROPOSED HOUSE, CHORLEY WOOD.

THE plans of this house are illustrated with the view, and explain themselves.

The materials are plaster and half timber, with bright red brick dressings, and the roof covered with grey slates.

Mr. J. E. Dixon-Spain is the architect.

PORCH OF HOUSE, HINDHEAD.

THIS is a piece of timber construction entirely in oak, filled in partly with brick and partly with plaster, the oak being left untouched to weather a silver grey. The roof is covered with old tiles. Mr. E. J. May is the architect. The drawing was exhibited at the last Royal Academy.

SKETCHES.

THE four sketches by Mr. J. W. Hepburn are good examples of free pen-line sketching. The subjects—the Sainte Chapelle, St. Michael's, Coventry, the Norman Porch and the West Gate at Canterbury—are all well known.

METROPOLITAN WATER BOARD.

AT the sitting of the Metropolitan Water Board on Friday last week the following matters were dealt with—

Supplies to Southgate.—It was agreed that an expenditure of 8,650*l.* be incurred in laying a 16-in. main from the Ridgeway, Enfield, to the Southgate Reservoir, and a 9-in. main from the Hoe-lane Pumping Station to the 9-in. main to Holtwhite's Tower, for the purpose of improving the supply to Southgate.

Periodical Contracts.—It was resolved to enter into agreements with the following firms for the work of pipe-laying in the various districts for the year ending March 31, 1908—Eastern District, W. & C. French; New River District, T. Docwra & Sons; Kent and Southern Districts, John Aird & Sons; Western District, J. Mowlem & Co., Ltd.

Competition.

NURSES' HOME, WOLVERHAMPTON.—In the competition for a new Nurses' Home in connexion with the Wolverhampton and Staffordshire General Hospital, the first premium has been awarded to Mr. Arthur Worrall, Wolverhampton; the second to Mr. J. A. Minty, Craven-street, London; and the third to Messrs. Crouch & Killby, Gray's-inn-square, London.

BOOK RECEIVED.

CARPENTRY AND JOINERY. Edited by Paul N. Hasluck. (Cassell & Co. 7*s.* 6*d.*)

Trade Catalogues.

MESSRS. POTTER & Co. send us a copy of their catalogue, entitled "Concrete as a Building Material." The pamphlet serves to illustrate various directions in which concrete can be usefully applied by architects, either alone or in conjunction with steel joists and corrugated steel rods. For the erection of monolithic concrete walls the firm offer a handy set of moulds, comprising steel standards, wall gauges, cramps, and stays, and timber shuttering. No doubt brickwork is generally cheaper than concrete, but for buildings where strength is the main requisite and appearance counts for little, concrete frequently compares favourably, especially when permanent moulds are possessed by the builder. Potter's armoured floors, of which various types are illustrated, may fairly be regarded as representing concete-steel construction, although in some cases I-beams are employed as joists. There is no reason why the principles applied in the construction of their floor slabs should not be extended to the design of girders and joists. If this were done, the foundations would be laid for a complete system of concrete-steel, which, for many reasons, is preferable to a hybrid method of construction. A novelty in stair design is illustrated by the spiral staircases erected by the firm in the Nurses' Home at the Edinburgh Fever Hospital. The concrete treads—presumably reinforced—have no risers, and, besides being easy to keep clean, offer less obstacle to the diffusion of light than solid stairs. The "Ferro-Concrete Lintols," described on a subsequent page, show that short beams are already made in concrete-steel by this firm, a fact which supports the hint given above as to the production of larger beams in the same material. Among other structures to which Messrs. Potter have applied plain and reinforced concrete, we may mention domes, reservoirs, and roofs. Various applications of steel bracketing and lathing are also shown for the suspension and construction of hanging ceilings below concrete or timber floors, for the purpose of minimising the transmission of sound. This little catalogue constitutes one more proof of the advances made by concrete in architectural practice, and is a satisfactory indication of the fact that British firms are beginning to take up concrete-steel in earnest.

Messrs. Watson & Co. send us a catalogue of their "Reliance" lead and bitumen damp course and sheathing, and standard asphalt. The damp course and sheathing consists of sheet lead covered on both sides with asphalt, and a casing of sanded asphalted felt to preserve the former-mentioned materials from injury, and to provide a key for mortar. It is made in sheets 45 ft. long and to any required width. In addition to its use as a damp course the sheeting is applicable as a covering for roofs, and for any purposes where the exclusion of moisture and the retention of water are necessary. The standard asphalt of the same firm is a manufactured product into which Trinidad asphalt enters largely, and is recommended for making vertical damp courses in conjunction with horizontal joints formed by "Reliance" damp course sheeting.

We have received from the Chloride Electrical Storage Company, Ltd., a leaflet describing how batteries and "Highfield boosters" can be used with advantage in alternating current supply stations. They give an interesting description of a battery and booster plant they have installed for Messrs. Harland & Wolff at Belfast. The apparatus is admirably adapted for maintaining the excitation required for the alternating current generators constant, and also for preventing sudden fluctuations of the load on them. Highfield boosters are now extensively used. Any station engineer who is not familiar with the action of this apparatus would do well to write for this leaflet.

Correspondence.

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SIR,—I was surprised to be informed the other day that an architect with his assistant entered St. Etheldreda's Church, Fulham, which was built from my designs, and, without asking leave of anyone at all, proceeded to measure up the whole building.

It is believed they came from Leamington; and I cannot help wondering if the client has any knowledge of the way in which designs (!) for a presumably new church are being prepared. The verger, seeing these people commence operations, concluded permission had been given.

It may be argued that imitation is the sincerest form of flattery, but these proceedings would appear to go a step beyond; and, at any rate, show an extraordinary lack of honour and common courtesy.

Can this instance then be representative of the ordinary methods pursued where brains fail?

A. H. SKIPWORTH.

ZODIACS ON MEDALS.

SIR,—It appears that medallic artists have also made considerable use of the zodiac on coins and medals, though the following examples are not all that I know of:—

Indian.

1. On gold mohurs, each coin bearing one sign in sun rays. Indian bull, crab, woman seated with lotus, fishgoat. Minted at Agra, by the Emperor Jehangir, 1605-1627. Some bear the name of his wife, Nur Jahan, who has been said to have suggested using the signs. In Medal Room, Royal Library, Utrecht. Engraved in *Knowledge*, No. 165.

2. In a similar set of zodiacal mohurs to No. 1. Leo faces the reverse way, as does Taurus, Virgo stands, Aquarius is seated. Engraved in *Knowledge*, No. 165.

3. In a similar set of zodiacal mohurs to No. 1. Virgo has wings and a branch. Aquarius is a vase. Engraved in *Knowledge*, No. 165.

4. A set of silver rupees, minted at Ahmadabad, contains one sign on each coin. Gemini is a a boy and girl embracing, crab, fishgoat.

Roman.

5. A medal of Augustus bears two fishgoats. Engraved in Spence: "Polymetis."

6. On a medal are four signs an an arc, above Apollo, Cupid, and Fortuna. In Pisa Museum. Engraved in "Museo Pisano," tabula 18. Also in Sandby: "Virgilii Maronis," 1750, i., pl. xv.

7. On a large medallion, around Jupiter enthroned. Sol and Luna, with emblems above; Neptune and Thetis below. In Florence Museum. Engraved in "Museo Florentino," iv., tab. 66, and in Sandby, i., pl. ix., "Perinthimnbreökormnimnmn."

8. Upon a coin of Trajan; died A.D. 117. Stevenson: "Dictionary of Roman Coins," 1889.

9. Upon the reverse of a gold coin of Hadrianus d. A.D. 138. In British Museum. Stevenson.

10. On the reverse of a brass coin of Antoninus Pius; d. A.D. 161. Stevenson.

11. On a large medal of Antoninus Pius, with Serapis surrounded by heads of planetary deities. Minted at Alexandria. Stevenson. Engraved in King: "Antique Gems," 1872, i., 252.

12. On an arc on a coin of Antoninus Pius, with infants as Seasons, Tellus, and bull. Stevenson.

13. On a coin of Commodus; d. A.D. 192. Stevenson.

14. On a coin of Severus, surrounding the sun and moon; A.D. 201. Fosbroke: "Encyclopædia of Antiquities," i., 192.

15. On a medal of Julia Mœsa; d. A.D. 217. Amastris. Stevenson.

16. On a coin of Elagabulus; d. A.D. 222. Ptolemais, Galilee. Stevenson.

17. On a coin of Alexander Severus, surrounding Jupiter, and two men with cornears. Sol, Luna, above Perinthe. Engraved in Montfaucon. Supp. i., pl. ii.

18. On a coin of Valerian. Æge. Dethroned A.D. 260. Stevenson.

19. On a coin of Valentinian I. with Diana, second brass; d. A.D. 270. Stevenson.

20. On a coin of Constantine I. he holds the zodiac. Thessalonica; d. A.D. 270. Stevenson.

21. On a coin of Constantine I. Thessalonica. Stevenson.

22. On a coin of Constantinus; d. A.D. 337. Stevenson.

23. Coin. Contormiate. Constantine I. surrounded by the zodiac; A.D. 315. Engraved in Stevenson.

24. On a coin, surrounding the head of Jupiter Serapis, identified by Vossius *et al.* with Joseph. Fosbroke, i., 192.

25. On a medallion, around Jupiter, with eagle, Sol, Luna, and above two men bearing fasces. Engraved in Montfaucon, i., pl. x.

26. On the medal of Contormades. Stevenson.

27. On a medal is Sol in quadriga, woman with cornear and cornucopia, and Cupid below an arc with signs. In Pisa Museum. Engraved in "Museo Pisano," tab. 18, and Sandby, i., tab. xiv.

Italian.

28. On a silver Venetian medal. In a shop in Piazza S. Marco.

French.

29. On a large bronze medal are Leo, Virgo, Libra, above Phœbus driving; 1661. In the Great Hall of the Paris Mint. Catalogue No. 91A. Engraved in Menestrier: "Medailles de Louis XIV."

30. Round the edge of a medal for the birth of Louis XIV.; 1698. Great Hall, Paris Mint. Engraved in Menestrier.

31. Around the edge of a large bronze medal, inscribed "Paix de Lunville, 1801." In the Paris Mint. Cat. No. 98.

32. Surrounding Fortuna on a wheel. Virgo as Minerva between two owls. Lobster. Napoleon in Elba, reverse. Table case 3, Cat. No. 222. Die Room, Paris Mint.

33. On a bronze medal of Jeanne d'Arc are Taurus, Sagittarius, and three other signs, on an arc, reverse; 1821. Last room, Paris Mint.

34. On a large bronze medal is an arc with signs, above Napoleon as Apollo in a chariot; 1854. Same room.

Dutch.

35. On a gold medal, around the planetary system, lobster, Virgo with branch, man with scales. Struck at the Hague for William IV., about 4 in. diam. In the Medal Room, Royal Library, Hague. No. 714.

36. A duplicate of No. 35 in silver; 1747, is in the same room.

37. Gold medal about 2 in. diam., with same design as No. 35. In same room.

Spain.

38. Emporiæ, silver drachm. Pegasus, dolphins. Bunbury Collection. Sotheby: "Sale Catalogue," 1896. No. 1.

39. Acinipo, bronze. Cornspike, dolphin. Bunbury. No. 4.

40. Gades, bronze. Two fishes. Bunbury, No. 4.

41. Ilipa, bronze. Cornspike, fish. Bunbury, No. 4.

42. Emporiæ, bronze. Pegasus. Bunbury, No. 5.

43. Ilerda, bronze. Wolf. Bunbury, No. 6.

44. Massalia, bronze. Bull. Bunbury, No. 7.

Gaul.

45. Massilia, silver drachm. Lion. Bunbury, No. 8.

46. Sicilian tetradrachm (imitation), silver. Dolphins, bird. Bunbury, No. 12.
47. Phistelia (imitation), silver. Ram's head. Bunbury, No. 14.
48. Macedonia (imitation), silver. Gorgon head. Bunbury, No. 14.

Etruria.

49. Populonia, silver didrachm. Herakles' head and club. Bunbury, No. 16.
50. Populonia, silver didrachm. Gorgon, star, crescent. Bunbury, No. 17.

Latium.

51. Alba, silver, diobol. Dolphins, griffin. Bunbury, No. 21.
52. Aquilonia, bronze. Pegasus, tripod. Bunbury, No. 23.
53. Ancona, bronze. Branch. Bunbury, No. 24.
54. Volcanom, bronze. Human-headed bull. (Taurus, Aquarius). Bunbury, No. 24.
55. Populonia, bronze. Herakles' head, dolphins. Bunbury, No. 25.
56. Æsernia, bronze. Human-headed bull. Bunbury, No. 25.
57. Æsernia, bronze. Eagle, serpent. Bunbury, No. 25.
58. Larinum, bronze. Dolphin. Bunbury, No. 25.
59. Tuder, bronze. Eagle. Bunbury, No. 26.
60. Larinum, bronze. Centaur. Also eagle.

Campania.

61. Capua, silver didrachm. Bull. Bunbury, No. 27.
62. Cumæ, silver didrachm. Cornear. Bunbury, No. 28.
63. Hyria, silver didrachm. Androcephalous bull. Bunbury, No. 28.
64. Cales, silver didrachm. Branch, serpent. Bunbury, No. 29.
65. Cumæ, silver didrachm. Sea serpent (Cetus). Bunbury, No. 29.
66. Cales, silver didrachm. Cornear, wolf, eagle. Bunbury, No. 31.
67. Cumæ, silver didrachm; B.C. 490-480. Crab. Bunbury, No. 32.
68. Cumæ, silver didrachm. Lion, cornspike, bull. Bunbury, No. 33.
69. Cumæ, s. didrachm. Star, bull, Herakles, dolphin. Bunbury, Nos. 34, 35.
70. Neapolis, s. d. Androcephalous bull, bull, Amphora (Crater), lion, half-bull, dolphins. B., Nos. 37, 38, 40, 44, 45.
71. Nola, s. d. Androcephalous bull, bull, crescent, Dioskuri, cornear, dolphin, lion, star, lyre, serpent. B., Nos. 46-48.
72. Phistelia, s. d. Bull, cornear, dolphin. B., No. 49.
73. Nuceria Alfaterna, s. d. Ram's horns, head, Dioscuros. B., No. 50.
74. Teanum, s. d. Herakles' head, lion's head, club. B. Nos. 52, 53.
75. Cales, b. Bull. B., No. 54.
76. Atella, b. Bull, cock. B., No. 55.
77. Capua, b. Pegasus, cornear, Selene, eagle, lion, lyre. B., Nos. 56, 57.
78. Neapolis, s. d. Bull, lyre, half-bull, tripod, dog, Herakles, lion, cock. B., Nos. 58, 59.

Apulia.

79. Arpi, s. d. Star, cornears. B., No. 60.
80. Canusium, s. obol. Amphora, lyre, vase, Herakles' head, club, cornear, bull's head, eagle, club, bow and quiver (Gemini). B., Nos. 61, 62.
81. Arpi, b. Bull, branch, cornear, horsehead (Pegasus), Herakles' head, woman with palm (Virgo with Palma), Cupid on prow (Coma and Argo), bow, quiver, club, dolphin, crescent. B., Nos. 63, 64.
82. Luceria, b. Lion, cornspike, dolphin. B., No. 65.
83. Teate, b. Eagle, Herakles' head, lion, crescents. B., No. 66.
84. Venusia, b. Dolphins, Herakles, club, lion. B., No. 67.

Calabria.

85. Tarentum, gold and silver. Dolphin, Dioskuri, Herakles' head, lion skin, eagle, star, vase, lion, bow, club, crayfish (Cancer), bird, fish, Pegasus, serpents strangled by Herakles (Ophiuchus). B., Nos. 68-104.
86. Azetini, b. Eagle, cornear, dolphin. B., No. 107.
87. Butuntum, b. Cornear, dolphin. B., No. 107.
88. Graxa, b. Two eagles (Aquila and Lyra eagle). B., No. 107.
89. Orra, b. Herakles' head, Cupid, lyre. B., No. 107.
90. Tarentum, b. Dolphin. B., No. 107.
91. Uxentum, b. Herakles, club. B., No. 107.

Lucania.

92. Heraclea, s. d.; B.C. 380-300. Serpents, Herakles, club, vase, lion, cornear, bow, bucranium, altar, branch, arrow, cup. B., Nos. 109-116.
93. Laus, s. d.; B.C. 550-500. Androcephalous bull, crow, cornear, lion. B., Nos. 117-120.
94. Metapontum, s. d. Lion, cornear, ram's head, bird, branch, bow, serpent, altar, bucranium, head with ram's horn and ear, corn star, griffin, dog, Herakles, club. B., Nos. 121-145.
95. Siris, s. d.; B.C. 560. Bull. B., No. 150.
96. Sybaris, s. d. Bull, bird, trident. B., Nos. 152-155.
97. Thurium, s. tetradrachm. Bull, two fishes, fish, trident. B., Nos. 156-162.

Bruttium.

98. Bruttii, gold d.; B.C. 282-203. Star, Eros, trident, Herakles' head, lion skin, club, serpent, Dioskuri, bird, vase, dog, bucranium, crab, crescents, eagle, amphora. B., Nos. 184-191.
99. Caulonia, s. stater; B.C. 550-480. Branch, altar, dolphin, amphora. B., Nos. 192-197.
100. Croton, s. stater; B.C. 550-480. Crab, tripod, dolphin, fish, eagle, branch, corngrain, serpent, Pegasus, Herakles, lion, olive branch, cornear, altar, two dolphins, griffin, cup, bow, club, Herakles, and two serpents.

D. J.

WHAT IS A "WING-FRAME"?

SIR,—Referring to a case at the Clerkenwell County Court, reported in the *Builder* of March 2, on page 273, etc., I shall be glad to know what is a "wing-frame."

I have consulted several people in the building world, and no one knows what is meant by this term, and no one knows the term at all. Yet the judge is reported to have held that the custom of measuring "wing-frames" over-all had been established.

I think it would interest many of your readers to be told what a wing-frame is.

FREDERIC COPE HUNT.

*** We have made inquiries, but cannot meet with any one who ever heard of a "wing-frame." We certainly never did. But the learned judge seems to know all about it.—ED.

The Student's Column.

ELECTRIC LIGHTING AND HEATING.—X.

Dynamos—Direct Current Dynamos—Series Dynamo — Shunt Dynamo — Compound Dynamo —Alternators—Frequency—Bipolar Machine—Wave Windings—Parallel Running of Alternators.

DYNAMOS.—When a moving wire cuts lines of magnetic induction, an electromotive force is generated in it. If the wire form part of a closed circuit, a current will flow in the circuit, and energy will consequently be expended in heating it. To keep the wire moving across a strong field force must be expended, the electrical energy generated being the mechanical equivalent of the work done. This method of generating electric energy is the method utilised in dynamo-electric machines. These machines, which are often referred to simply as "dynamos" or "generators," consist essentially of two parts, a rotating part, called the rotor, and a stationary part, called the stator. In some machines the stator consists of a strong electro-magnet producing an intense magnetic field, and the rotor consists of coils of insulated copper wire which are whirled with great velocity through this field. In other machines the moving part is the electro-magnet, and the electromotive forces are induced by the revolving magnetic lines cutting the fixed coils of the stator. The coils in which the electromotive forces are induced are joined in series with the external resistance, and must be connected so that all the induced forces are acting in the same direction round this circuit. If the resistance of the external circuit be very high, the current flowing will be very small, and thus the electric energy generated, which is the product of the induced E.M.F. and the current, will also be very small. In this case, if the frictional resistance of the bearings be small, little power will be required to turn the rotor. When, however, the resistance of the external circuit is low, the current will be large, and considerable power has to be expended in turning the rotor. If the external resistance be too small, the large current which will flow may seriously overheat, or even melt, the copper coils. We shall now consider dynamos in detail, and it is convenient to divide them into two main classes, depending on whether the current in the external circuit flows always in the same direction, or is being continually reversed. The former is the case when direct current dynamos are used, the latter when alternating current dynamos or "alternators" are used.

Direct Current Dynamos.—There are three main types of direct current dynamos: (1) Series, (2) shunt, and (3) compound. In Fig. 9 a series dynamo is represented. The stator consists of a large electro-magnet of cast-iron or steel, and the rotor of a bundle of circular iron stampings keyed to a cylindrical shaft. These stampings form a cylinder, and on the surface of the cylinder, in lines parallel to the axis, are stretched copper conductors which form coils practically surrounding all the flux of magnetism between the two poles. The ends of these coils are connected with one another in a symmetrical manner at the commutator, which consists of a number of bars of copper insulated from one another and on which rest two copper or carbon brushes connecting the copper coils with the external load. The currents in the conductors flow in one direction when passing a North pole, and in the opposite direction when passing a South pole. Hence the current in the coil, of which the conductor forms a part, must reverse in some intermediate position. In the process of reversal the coil is short-circuited by one of the brushes pressing on the commutator. It will be seen that the currents in the armature of a direct current machine are really alternating currents flowing first in one direction and then in the other, although the currents in the external circuit always flow in the same direction.

Series Dynamo.—In the series machine (Fig. 9), if the switch of the external circuit

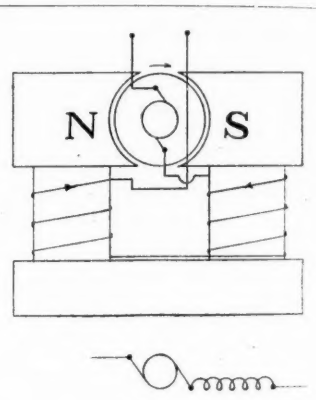

Fig. 9.

be closed when the armature is being rotated by the steam-engine, a small E.M.F. will be generated in the armature coils owing to the "remanent" magnetism always left in the field magnets. A current will therefore flow round the circuit and excite the field magnets. The current and the induced magnetism will go on increasing until the E.M.F. generated is only sufficient to produce the current and equilibrium is attained.

Let us now suppose that we read the current C in the external circuit by a suitable ammeter, and the voltage V between the brushes by a voltmeter. The product VC will give us the power expended in the external circuit. But this does not represent all the electrical power generated, for the current C, passing through the armature coils, the resultant resistance of which we suppose to be r, generates heat in them at a rate measured by $C^2 r$ joules per second. Hence, if E denote the total electromotive force generated, so that EC represents the total power generated, we must have

$$EC = VC + C^2r, \text{ and thus } E = V + Cr.$$

The expression Cr is often referred to as the "lost volts" in the armature.

Shunt Dynamo.—The electrical connexions of a shunt dynamo are shown in Fig. 10. The construction of the armature and field magnets is practically identical with that of the series dynamo, but the electrical connexions of the field magnet windings and the armature are different. Each end of the field magnet windings is connected with a commutator brush, and the load is thus in parallel with the circuit formed by the windings of the field magnets. The E.M.F. generated drives a current through the armature which divides into two at the terminals of the machine, part supplying the load, and part exciting the field magnets.

When the armature of a shunt machine is started rotating either on open or closed

external circuit, the low E.M.F. generated in it by the residual field will send a small current round the field magnet windings. This current excites the field magnets and

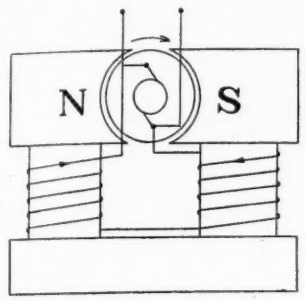

Fig. 10.

increases the induction in the air between the rotating cylinder and the pole-pieces of the field magnets, that is, in the "air-gap." Both the E.M.F. and the current, therefore, will go on increasing until the E.M.F. generated in the armature conductors only suffices to produce the magnetising current required to maintain the magnetic field giving that E.M.F.

Compound Dynamo.—In a compound dynamo (Fig. 11) there are double sets of windings round the field magnets. In one type of compound machine one set of windings is connected across the brushes, as in a shunt machine, and another set is in series with the external circuit, as in a series machine. When the switch in the external circuit is open, the machine excites itself in the same way as a shunt machine. When the machine is working on a load, the current in the series windings equals the current in the load, and so the magnetic field in the air-gap is strengthened. Hence the voltage drop due to the armature resistance may be compensated by the increase of the E.M.F.

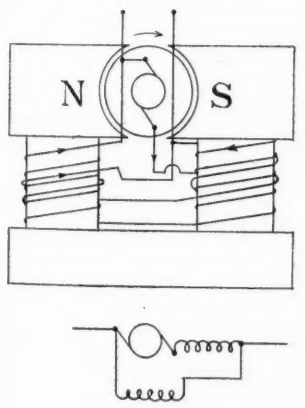

Fig. 11.

generated in the stronger field. A compound machine, therefore, can be constructed so as to give practically the same voltage at all loads. It can also be designed so that the voltage rises with the load, and it is usually so designed for electric traction work. In this case it is said to be over-compounded.

Series dynamos are now seldom employed. For electric lighting, charging accumulators or electroplating, shunt dynamos are now almost exclusively employed. The E.M.F. is regulated by means of a variable resistance (rheostat) in circuit with the field magnet windings. When this resistance is high the exciting current is small. Hence, the magnetic field will be weak, and the terminal E.M.F. low. By diminishing the resistance of the rheostat we can raise the E.M.F. to any desired value, and keep it at this value, as the load alters, by adjusting the rheostat.

A striking point of difference between alternators and direct current dynamos is that the latter are self-exciting, while the former are not. In direct current machines the E.M.F. driving the exciting current round the field magnet windings is generated by the machine itself, but in alternators a small direct current machine is required for this purpose. This dynamo is called the "exciter," and is usually mounted on the shaft of the alternator.

Alternators.—Alternators may be divided into three classes. In the first class the rotating part of the rotor consists of the coils in which the E.M.F. is generated, and the stationary part or stator consists of the field magnets. There is no commutator. The ends of the rotating windings, which may be connected in series or parallel, are connected with metal rings fixed on the shaft, but insulated from it, on which press copper or carbon brushes connected with the terminals of the machine. These rings are called slip rings or collector rings. In the second class of alternator the field magnets rotate, and the coils in which the E.M.F. is generated (the armature) by the rotating field are stationary. In this case the ends of the armature are connected directly with the terminals of the machine. In the third class of alternator both the field magnets and the armature are fixed, the magnetic flux through the coils of the armature being periodically altered by masses of iron fixed to the rotor moving into new positions relatively to the field magnets. These machines are called inductor machines.

Frequency.—In the alternator the magnetic flux linked with an armature coil continually alters. The simplest form of alternator consists of a loop of wire rotating between the poles of a horse-shoe magnet. In this case the E.M.F. generated will go through all its values in the time taken by the loop to make a complete revolution. This is called the period of the E.M.F. This E.M.F. vanishes twice every revolution, namely, at the instants when the magnetic flux through it is a maximum, and it has maximum or minimum values at intermediate points. The number of periods per second is called the frequency of the alternating current, and is generally denoted by f. If n be the number of revolutions of a bipolar machine, f = n.

Multipolar Machine.—The principle of a multipolar machine may be understood from Fig. 12. The circles in the centre of the figure represent the slip rings. The rotor consists of circular iron stampings forming a cylinder with its axis at right angles to the plane, containing the axes of the field magnets. The windings consist of copper conductors placed in slots on the surface of this cylinder. Four of these are shown in the figure. They are represented in the plane of the paper for convenience of drawing, but really they are parallel to the axis of the rotor. The magnetic flux from a field magnet of North polarity divides into two, half going to each of the magnets of opposite polarity. It is easy to see that, if we have 2p poles, the frequency f will be given by f = pn, where n is the revolutions per second of the rotor.

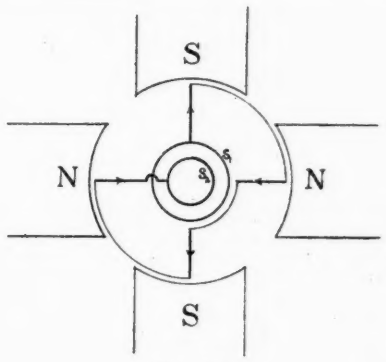

Fig. 12.

Let us suppose, for instance, that an alternator has 20 poles, and that the rotor is making 300 revolutions per minute. Then, since n = 300/60 = 5 and 2p = 20, so that p = 10, we see that the frequency = 5 × 10 = 50. We shall see in the chapter on alternating currents that the frequency of an alternating current is a quantity that has to be known accurately in practical work.

Wave Windings.—A useful method of studying cylindrical armature windings is to imagine that the winding is cut across parallel to the axis of the cylinder and developed out into a plane. In Fig. 13 a diagram of a four-pole alternator is shown developed out in this fashion. The terminals of the armature windings are A and B. For clearness of illustration, only one armature conductor per pole is shown. We have to imagine that the field magnet poles are moving rapidly underneath the armature windings. Applying Fleming's rule, and remembering that the field magnets moving in one direction with the armature stationary, is equivalent electrically to the armature moving in the other direction, and the field magnets stationary, we see that the induced E.M.F.s will be in the direction of the arrow heads. It will be seen that when the field magnets move through a distance equal to the distance between the centres of two adjacent pole-pieces, that is the "polar pitch," the induced E.M.F.s in all the windings will have reversed in direction.

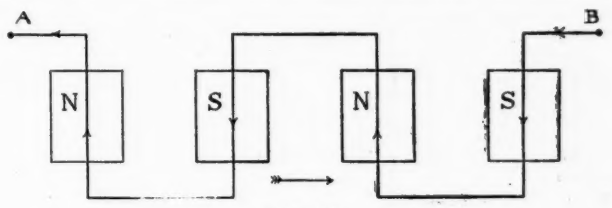

Fig. 13

Parallel Running of Alternators.—The efficiency of a steam-engine or a steam-turbine is much higher when it is running on a heavy load than when it is running lightly loaded. It is necessary, therefore, for the engineer of a central station to arrange that his engines never run for long periods on light loads. In central stations each engine is generally coupled to its own alternator so as to avoid the losses consequent on the use of gearing. It would not conduce to economical working to have each generator supplying its own independent set of mains, as the pressure has always to be maintained, and so we would have all the engines always running, and for a considerable time every day their loads would be very small. It is therefore necessary to connect them all in parallel to two mains, called "bus bars," and care is taken to ensure that the number of machines running at any time is only sufficient to carry the load.

If a number of white spots be painted round the rotor of an alternator, and illuminated by light from an arc lamp supplied with energy from the bus bars, then, in certain cases, when the E.M.F. generated by the alternator is in step with that between the bus bars, the spots appear to be stationary. In this case the alternator is said to be in synchronism with the bus bars, and, when connected with them in the proper way, will run steadily "in parallel" with the other machines. If the speed of the alternator be too high the spots will appear to rotate in one direction, and when too low in the opposite direction, the adjustment of the speed can thus be made with considerable accuracy by means of this optical phenomenon.

WESLEYAN CHURCH, OKEHAMPTON.—A new Wesleyan church and Sunday-school have been opened at Folly Gate, Inwardleigh. The church has seats for 130, and this accommodation can be increased to provide for 400 by sliding back a partition dividing the church from the school. The front elevation of the buildings is of blue-grey limestone, with a main coign of granite, the other dressings being of Bath stone. The pews, rostrum, and other woodwork are of pitch pine, whilst the windows are of cathedral glass. Mr. F. J. Worden was the architect.

Obituary.

M. TOUDOUZE.—We regret to have to record the death, at the age of 58, of a very talented French painter, M. Toudouze. He was a pupil of his uncle Leloir, and obtained in 1871 the Grand Prix de Rome. He obtained medals in the Salons of 1876 and 1877, and at the General Exhibition of 1889 and 1900. He was created "Officier" in the Legion of Honour in 1903. He was a very fine decorative painter, and in his large coloured cartoons for execution in tapestry at the Gobelins, some of which have been exhibited at the Salon and commented on in our columns, he showed a remarkable perception of the exact capabilities and limits of tapestry pictures. These tapestries, intended for the decoration of the Parliament-chamber at Rennes, formed a series in illustration of the history of Brittany; the last one, the "Combat des Trente," he did not live to finish. Among his other works may be mentioned the painting of "Robin et Marion" in one of the foyers of the Opera Comique; a picture for the decoration of the Sorbonne; and a number of illustrations for a French edition of the Waverley novels.

MR. CLUTTON.—The death, on March 10, at Santon, near Reigate, is announced of Mr. Robert George Clutton, of Great College-street, Westminster, in his sixty-eighth year. Mr. Clutton was senior partner of the firm of Messrs. Clutton, agents to the Ecclesiastical Commissioners, the Commissioners of Woods and Forests, and several private owners of landed estates. His father, Mr. John Clutton, was a principal founder of the Surveyors' Institution, of which Mr. R. G. Clutton was at one time a member of council, as well as member of the Land Surveyors' Club, and Surveyors' Association, and similar bodies.

MR. STEPHENS.—Mr. Frederic George Stephens died on March 9, at his residence, No. 9, The Terrace, Hammersmith, W., aged seventy-nine years. Mr. Stephens, who began his artistic career as a painter, was chosen as one of the seven members of the Præ-Raphaelite Brotherhood: he subsequently became a contributor to the Press, and was art critic during forty years upon the staff of the *Athenæum*, for which journal he also wrote some valuable memoranda upon the pictures of many collectors and owners of art galleries in this country.

General Building News.

ST. JAMES' CHURCH, GREAT YARMOUTH.—It is proposed to carry out the completion of this church. The work includes the taking down of the present transept gables, the removal of the heavy concrete dome and cross arches, continuing the nave roof through at a uniform level, opening out the present side arches now filled with concrete and dividing the large central arches into two, with an extra stone column and arches, building new north and south aisles and vestries at the east end; taking out the present west doorway and adapting it for a baptistry, and building a new north-west porch to take its place, and a small south porch opening into the south aisle; completing the pinnacles on the east and west gables, and erecting a bell-cot at the north-west corner of the nave. The general treatment of the elevations will be similar to the present design of brickwork and flint panelling, with stone windows, and the interior work will be in white brickwork with red arches. It is also intended that the church shall be heated by hot water. The architects of the proposed work are Messrs. Olley & Hayward.

BAPTIST CHURCH, HERTFORD.—On the 14th inst. the newly completed Baptist church at Hertford was opened. The building, which was designed by Messrs. G. Baines & Son, of London, is in the style of the late period of Gothic architecture. The chief feature of the front gable is a seven-light window, flanked on each side by an octagonal turret surmounted by ornamental cupolas. A projecting narthex gives an effective appearance to the front, and the sides are relieved by double transepts. The windows are filled with Cathedral tinted glass. Internally the roof is of pitch pine, hammer-beam construction. The seating is of oak and semicircular in shape. The accommodation will be for a mixed congregation of 500, or 450 adults. The pulpit is arranged in a central position with a flight of steps on each side, and is of Austrian oak and semicircular in form. In front of the pulpit there is a platform, also semicircular in form, and underneath it a marble baptistry with mosaic floor approached by two flights of marble steps, and supplied with warm water from the heating apparatus, which is by hot water on the low-pressure system with radiators, the lighting being by electricity. The pews are of Austrian and Canadian oak, and stained to match the dado, the roof timbers, and the pulpit. The walls and plaster of the ceiling are slightly tinted with cream colour. At the rear of the pulpit is the choir with organ chamber, and accommodation for thirty-four persons. At this end of the church there is an internal arch rising from columns of Irish green marble and buttresses of Bath stone. There is a vestry for the pastor, a ladies' room, and other conveniences. The contract price was 2,251*l*. Messrs. F. Wood & Co., of Luton, were the builders.

CHURCH EXTENSION, PORTSMOUTH.—On the 9th inst. the foundation of the St. Wilfrid's Mission building, which is to occupy the corner site at the junction of George-street with Ewart-street, Buckland, was laid. The work is being carried out by Mr. Henry Jones, contractor, from designs by Mr. J. T. Blackwall, the architect.

CHURCH ENLARGEMENT, CARDIFF.—The work of completing St. Dyfrig's in Wood-street, Cardiff, has now been commenced. The first part of the church was built from plans made by the late Mr. John D. Sedding, and the original plans are now being followed after revision by Mr. Arthur Grove, of London. The extension, which will add three bays to the structure, and will accommodate 400 additional worshippers, is being made by Messrs. James Allan & Co., under the direction of Mr. Grove. A feature of the work is the depth to which the foundations have to be built. The church stands, not only on the "made ground" of the Riverside district, but close to the river, and it has been found necessary to sink the foundations as deep as 22 ft. The contract has been signed for 3,689*l*.

BAPTIST CHAPEL, MAIDSTONE.—The members of the Baptist community in Maidstone are building a new chapel in Knightrider-street. The new chapel will cost 4,500*l*., and is being built of Kentish ragstone. Accommodation will be provided for 500 people, and there will be a baptistry, and vestries for the pastor and deacons, while part of the old Blue Coat School will be used for Sunday-schools. The architects are Messrs. Ruck & Smith, and the builders Messrs. Wallis & Sons.

WESLEYAN CHAPEL, LINCOLN.—The Wesleyan Methodist School-Chapel, which has been erected on West-parade, Lincoln, was recently opened by the Mayoress of the city. The new chapel, which has cost some 2,000*l*. and provides accommodation for both a Sunday-school and religious services, faces Hampton-street, and the front is in Derby stone. At each side of the chapel are classrooms for Sabbath-school children, with entrances from the chapel, and the total accommodation provided in the building is for 370 persons. Mr. R. Marriott, contractor, of Rushden, Northampton, has carried at the work, to plans prepared by Messrs. Green, Knowles, & Russell, Liverpool.

BOARD SCHOOL, EAST WEMYSS, DUNDEE.—A new school is to be erected at East Wemyss from competitive designs by Mr. G. Charles Campbell, architect. The school will have three stories in front and two in the tear. On the ground floor are cookery and laundry rooms, science room, and a spacious hall, with gymnasium. The class-rooms will hold 620 pupils; and the cost is estimated at 8,500*l*.

PROPOSED TECHNICAL SCHOOL, KILMARNOCK.—The Burgh School Board of Kilmarnock have resolved to proceed with the erection of a technical school on a site at Elmbank, in close proximity to the Academy. The estimated cost of the building is about 17,000*l*., and Messrs. Andrew & Newlands have been appointed architects.

BRANCH LIBRARY, NEWPORT.—A new public free library has been erected and opened in Corporation-road. The library has been built by Mr. J. H. Williams, contractor, Newport, from designs by Mr. C. T. Ward, the Borough Architect, and has cost about 9,000*l*.

CO-OPERATIVE PREMISES, MANCHESTER.—The new central offices of the Co-operative Wholesale Society in Corporation-street, Manchester, are now nearing completion. The block of premises occupies the whole of the frontage between Balloon-street on the south and Hanover-street on the north, and including the rear portion, erected a few years ago, it forms a rectangular building standing upon an island site and bounded by Corporation-street, Balloon-street, Hanover-street, and Federation-street. The new building will provide accommodation for the administrative departments of the society. The basement, the ground and the first floors are intended for the use of the accountancy and audit departments. The second floor contains the board-room, the committee-rooms, and the secretary's offices. The third floor is constructed to be used as dining-rooms and other offices, and the fourth floor is arranged as a hall for the quarerly and other meetings of members. It will provide seated accommodation for about 1,200 persons, with retiring-rooms, cloak-rooms, etc. There are three entrances to the building, with stone staircases, and three electric passenger lifts give ingress and egress to and from the various floors. The meeting hall will be 108 ft. long and 67 ft. broad. It will be spanned by a semi-elliptical ceiling rising to a height of 34 ft. It will be lighted at the back and front by large semicircle windows, the upper portions of which will be filled with figure subjects in stained glass illustrating commerce and various industries. The building will be lighted by electricity from the society's own installation, and the heating and ventilating will be done by a modification of the Plenum system. It is of fire-resisting construction throughout. It is 90 ft. high from the street to the parapet, and its foundations are laid on the red sandstone. The base of the walls is of Aberdeen granite, and the upper portion of Derbyshire stone and red pressed bricks. The work has been carried out by a building staff employed by the society under the direction and to the design of the architect to the society, Mr. F. E. L. Harris.

DENTAL HOSPITAL, MANCHESTER.—The new Victoria Dental Hospital in Oxford-road, near Manchester University, has been designed by Messrs. C. H. Heathcote & Sons. Its erection and equipment are expected to cost between 12,000*l*. and 15,000*l*.

NEW WORKHOUSE, WORDSLEY.—The new workhouse of the Stourbridge Union, erected at Wordsley, was recently opened. The work has been carried out at a cost of nearly 100,000*l*. from designs by Mr. Arthur Marshall, architect.

RIVER WEAR COMMISSIONERS' OFFICES, SUNDERLAND.—The new offices of the River Wear Commission, at the corner of John-street and St. Thomas-street, were opened on Wednesday last. Externally the new building has a rusticated plinth of Correnie granite, with a superstructure of blue Heworth freestone. The principal entrance from St. Thomas-street is of polished Correnie granite. Mr. J. W. White, contractor, of Sunderland, has carried out the work, and the building has been designed by the architects, Messrs. Henderson & Hall, of John-street, who were awarded the first premium in 1904 in competition with local architects.

MISSION PREMISES, COPNOR.—The foundation-stone of the permanent Mission of St. Wilfrid's, Copnor, was laid on the 9th inst., by the Hon. W. F. D. Smith. The premises will be built at a cost of 7,180*l*., according to the tender of Messrs. H. Jones & Sons. The central mission hall is flanked by a series of five classrooms. Provision for social clubs and recreation is made in the club building—separated by a corridor from the mission church—to which a kitchen is attached. Mr. Blackwell, architect, of Kettering, has prepared the plans for the work.

WORKHOUSE INFIRMARY, PLYMOUTH.—The foundation-stone of a new workhouse infirmary which is being erected for the Plymouth Guardians was laid on the 7th inst. The building will consist of five main blocks, the first being that of the nurses' quarters to accommodate twenty-one nurses, including the superintendent. The second will be the administration block situated in the centre of the grounds. On the east side the male infirmary of four wards of twenty-four beds each, two wards of eight bed and four small wards of three each for contagious and infectious cases, making together 124 beds, will be placed. On the west side a similar block will be provided for women and children. A fifth block for special cases, containing forty beds, and a ward of twelve beds for maternity cases, make altogether a total of 300 beds. Each block will be connected with the centre building by a covered way. The estimated cost of the scheme is 34,117*l*. Messrs. Thornely & Rooke are the architects of the work, Messrs. W. G. Lapthorn & Sons being the contractors.

Foreign.

FRANCE.—A strong protest has been made against the demolition of the cloister of the monastery of La Trinité, at Vendôme, and the work has been stopped.——The Government has presented to the Musée de l'Armée an equestrian statue of Napoléon by M. Frémiet, which was in the arsenal of artillery.——A competition has been opened for a new savings-bank at St. Brieue. ——The jury in the competition for a new primary school for boys at Nevers, have awarded the first premium to M. Charles Brazeau.——The Fine Art Society of Lyons has presented the medal of its salon to M. Tony Garnier, the architect, for his restoration of Tusculum.——The Municipality of Paris have commissioned M. Rafaelli, the painter, who is also an accomplished etcher, to execute a coloured etching representing the Place de l'Hôtel de Ville on a fête day; and M. Fonce has been commissioned to produce an etching of the Palace of Bagatelle with its park. ——The Paris, Lyons, and Mediterranean Railway Company are about to commence the works for the enlargement of their station at Chambery, at an estimated cost of 4 million francs.——The annual exhibition of the Salon des Artistes Independants has just been opened; it is installed, as last year, in the Conservatory on the Cours la Reine.——A historical art exhibition is to be opened at the Mairie of Neuilly-sur-Seine, on May 11.

GERMANY.—Large harbour works, to be completed this year, are being carried out in Tangiers by Messrs. Holzmann & Co., of Frankfort. The long breakwater and basins, 11 metres deep, were much needed, as large vessels have hitherto been obliged to ride in the open sea.——The firm of

Saga & Woerner, Munich, will shortly put in hand an important river harbour at Larache, West coast of Morocco, with advance works to prevent the further silting up of the river mouth. ——The Society of German Architects in Hanover has forwarded an address to the city of Hamburg, appealing against the mechanical restoration of the Church of St. Michael, recently destroyed by fire, on the ground that this would constitute an artistic untruth. The society points out that when this same church was rebuilt in 1750 the design expressed the existing religious sentiments, and begs that the same spirit may influence the new design. Professor Konrad Pressel, of Munich, who directed the work of the Simplon Tunnel from the south side, is of opinion that a new era in tunnelling has been entered upon. The Simplon Tunnel, which is the longest in the world, has proved that with the facilities at the command of modern technique even longer tunnels could be built. The Simplon Tunnel lies comparatively low, at 680 metres above the sea, *i.e.*, 600 metres lower than the Mont Cenis Tunnel, and this low altitude minimises working expenses and lessens the risk of avalanches on the line. One of the greatest difficulties to be contended with was making the working conditions bearable. In the St. Gothard Tunnel the temperature rose to 40 deg. C. (104 deg. Fahr.) and a higher temperature was looked for in the Simplon. Such measures were adopted, however, that by means of fans and running water the average temperature was maintained at 25 deg. C. (77 deg. Fahr.), and this although the heat of the rock and hot springs rose to 56 deg. C. (172 Fahr.). Another great difficulty was occasioned by the bursting out of large hot springs and by the nature of the soil, which at times was of a dough-like substance, very difficult to bore through, and this could only be accomplished by reason of the high state of perfection reached in modern technique.

ITALY.—The Italian Parliament has just thrown out a Bill for registration of engineers on the ground that it would favour scholasticism, and this in spite of the fact that the Bill left it free to all to practise privately, and, moreover, legalised competition between those who hold diplomas and those who do not. The leading principles of the Bill were simply the preservation of the title for those who had won it legally, and the guarantee afforded by the diploma to be required of those who were called upon to assist in public works or advise on tribunals. Since Parliament has refused to protect the public and to recognise the diploma, it is considered that it remains for engineers to found an association which shall include only those holding diplomas or whose talents shall compel recognition.—— Commendatore Antonio Devoto has offered to erect a monument in Buenos Ayres to Christopher Columbus, to celebrate the centenary of the freedom of the Argentine Republic. Only the most eminent Italian artists will be invited to compete. The anniversary falls in 1916.

AUSTRIA.—A new theatre, to seat 1,500, is in course of erection in Vienna. The design is the work of Eduard Prandl, who built the Apollo Theatre. The sculpture on the façade will be entrusted to eminent sculptors and will represent characters out of Strauss's operas.

SWITZERLAND.—The proposed Splügen railway will be built more or less on the lines suggested by the engineer, M. Ed. Locher-Freuler, while the tunnel will follow in direction and inclination the plans of Professor Hennings. The line would connect Chur with Chiavenna, and the tunnel would lie between Andeer and. Gallivaggio, a distance of 26 kilometres. At the Andeer entrance the tunnel would be 1,000 metres above the sea, and after rising to 1,040 metres it would drop at Gallivaggio to 800 metres above the sea. It would be a single line, and take eight years to complete. Under the railway tunnel would be built a second shaft for ventilating purposes and to carry off water and contain the cables for telegraph, telephone, signals, lighting, etc.—— On February 25 died Dr. K. Mayer-Eymar, curator of the Federal Polytechnic and Professor at Zurich University. He was well known for his knowledge of geology, palæontology, and allied subjects. As a result of his travels in the Valley of the Nile he published a treatise on "The Geology of Egypt."

WARSAW.—In his annual report on the trade and industry of Poland and Lithuania, Mr. Murray, the British Consul-General, states that the value of house property in Warsaw fell heavily during 1906, and, in connexion with this, the building and kindred trades also did very badly. During the last three years, from different causes connected with the disturbed state of the country and the labour troubles, the population of Warsaw has diminished by over 25,000, besides which the unfavourable state of trade and industry, and the general increase in the cost of living, which amounts to over 40 per cent., have induced all classes to economise as much as possible, especially in the matter of rent, so that not only has little or no building been done, but the houses are few in which several lodgings are not standing empty. Besides this, rent for those lodgings which are let is very difficult to collect, and in the poorer quarters of the town there are whole houses from which the landlords have been unable to collect any rent at all for a year or more. No new houses were, therefore, constructed, and such work as was done in the building trade was the completion of what was already in hand. Great difficulty was experienced by the contractors in carrying out such work on account of the constant strikes and exorbitant demands of the men, as well as the way in which they scamped their work. For instance, a bricklayer who formerly received 1r. 20c. a day stood out for 2r. 50c., and then professed himself unable to lay more than 150 bricks in a day instead of, as formerly, 1,000. Fortunately, the only work in hand was the completion of the partial reconstruction of forty-four old houses, but the increased cost of labour caused contractors a loss of 60 per cent. over their estimates. Of piecework the men would not even hear. For the above reason the demand for building materials in 1906 was very small indeed. Many of the smaller brickworks failed altogether, whilst the larger ones were barely able to cover expenses, as, whilst they had to pay higher wages to their men, the price of bricks went down even below the cost of production, as the smaller works were forced to sell off their stocks for what they could get. The usual consumption of bricks at Warsaw is estimated at about 150,000,000, but in 1906 barely 10,000,000 were required. There was naturally also little or no demand for cement for building purposes, and as no new railways were built or public works undertaken the demand for cement was limited to the quantity absolutely required for the repair and maintenance of existing railways, bridges, factories, houses, etc. During 1906 the Polish works sold altogether about 700,000 10-lb. barrels of cement, of which about 50,000 were exported to Germany and Austria-Hungary. The balance is reckoned to be the minimum with which Poland can do for repairs and maintenance. Prices were about 10c. per 10-lb. barrel higher than in 1905, but endeavours to form a syndicate to regulate prices were again unsuccessful, and there is no probability that either consumption or prices will improve in 1907. There may, however, be an increase of export to Germany as the duty on cement imported to that country is very low, whilst the price of cement there is high in view of the brisk demand. The balance-sheets of the Polish cement works for last year have not yet been published, but it is safe to say that again none of them will pay any dividend for the fifth year in succession. The fact is that their united producing power, which is 1,300,000 barrels of 160 kilos., is far in excess of any but an abnormal demand. There are now in Poland three terra-cotta works, all of which are doing pretty well, as their united output is not equal to the demand, which is steadily growing, and there is little or no competition from abroad in consequence of the high duty. Owing to the rise in the price of wood, floors, staircases, etc., which were formerly always made of wood, are now being made in many instances of tiles, besides which regulations recently issued by the sanitary authorities by which butchers' and grocers' shops have to have stone or tile floors, have given a big opening for this industry. The export of timber from the consular district of Warsaw was again very brisk in 1906, and prices ruled high. The quantity exported gradually increases, especially by the Vistula. In former years a considerable part of the timber exported, amounting to over 40 per cent. of the total quantity, went on to the United Kingdom, about 33 per cent. being consumed in Germany. In 1906, however, the United Kingdom took timber to the value of 2,000,000*l.* only, whereas Germany took 3,000,000*l.* worth. The change is very disastrous for the country, as Germany takes principally rough logs, whereas the United Kingdom takes sawn timber, which is more profitable to the exporter. The reason is stated to be the decreased demand in the United Kingdom and the increased demand in Germany, who seems likely to become the principal world's buyer for timber, instead of the United Kingdom.

TURKEY.—The new bridge over the Golden Horn, between Stamboul and Galata, will be a floating bridge, owing to the bad building ground on the site and to the great depth of the water, 40 metres. It will be about 470 metres long and 20 metres wide. At the embankments the roadway will be 2 metres above the constant water level and will rise at the centre for a length of 24 metres, to 5·3 metres in the clear above the water, so as to allow of the passage of small craft. At fixed hours during the night the centre of the bridge will be opened for a length of 54 metres to allow of large vessels passing through. For this purpose the pontoons will be provided with motors and screws.

SOUTH AFRICA.—At Lourenço Marques a memorial has been presented to the Governor-General by a number of influential residents and landowners pointing out the evil results likely to ensue if the Municipality persist in enforcing the building clauses of the present municipal regulations. His Excellency promised to represent matters to the Municipality.——The final stage in the preliminary arrangements for the erection of the new town hall and municipal offices at Krugersdorp has been reached. The tender of a local firm, Messrs. Robson & Holton, for the sum of 14,527*l.* 14s. 1d. has been accepted, provided the firm submits sureties to the satisfaction of the Council. It is estimated that a further 5,000*l.* will be expended.——The tender of Mr. George F. Warren, at 8,799*l.* 10s., for the erection of Potchefstroom Orphanage Buildings, has been accepted.——At the annual meeting of the master builders of Natal strong speeches were delivered condemning the Compulsory Arbitration Bill which the Natal Government proposes to introduce.——It is officially stated that during the period January 1 to 31 twenty-three plans were under consideration by the Cape Town City Council, of which fifteen were approved, four returned to the architects for amendment, and four remain under consideration. The approximate cost of the proposed work is 33,335*l.*

ABYSSINIA.—Mr. H. B. Johnstone, Consul at Adis Ababa, in his report for 1906 states, *inter alia*, that early in that year two traction engines were successfully brought into the capital by the Emperor's orders for the purpose of road-making, and two more have arrived since the year closed. The head of an important British firm came personally to interview the Emperor on the subject, with the result that the machines were adapted to the country, and the best to be obtained. A saw mill is already at work at Adis Ababa, and Greek artisans are engaged in quarrying and stone hewing. Machinery in connexion with house building generally is likely to be in demand as soon as the means of transport are simplified. The Government are already building in European style, and stone houses may be seen, some even of three stories in height, in the capital. Those who can afford such luxuries, however, are for the present confined to the immediate entourage of the Emperor, and are few and far between. The import of corrugated iron or zinc for roofing from the United Kingdom has lately increased owing to the construction of the Europeanised buildings just referred to. The most saleable size is 6 ft. by 3 ft. 8 in., 24 G. In Jubiti the price fetched was 11*l.* 10s. per English ton. European timber was unknown in Abyssinia four years ago, but some from Austria-Hungary, to the value of 20,000 dollars, was imported in 1906.

Sanitary and Engineering News.

BRIDGE RECONSTRUCTION, PERTH.—The railway bridge over King-street, Perth on the Caledonian Railway is being rebuilt from plans prepared by Mr. D. A. Matheson, chief engineer of the company. The head room of the new bridge will be 18 in. more than that of the old structure. The steel work was supplied by the Motherwell Bridge Building Company, while the asphalt work was done by Messrs. Walker & Company, Ayr.

DRAINAGE AND WATER SCHEMES, TROON.—The Troon Town Council have under consideration drainage and water schemes which, if carried out in their entirety, will entail an expenditure of over 5,000*l.* Some time ago the Council asked their Engineer, Mr. John Eaglesham, Ayr, to report on the drainage and water systems of the burgh, and Mr. Eaglesham's reports on both matters are incorporated in the Council minutes for this month. After consideration by the Public Health Committee and Town Council, it was decided to proceed with portions of the scheme. Consideration of the water proposals has been deferred for a month. The scheme provides for the duplicating of the present pipes at a cost of 3,372*l.*

Miscellaneous.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. Muir & McIlwraith, architects, have removed their offices from 42, Bloomsbury-square, to 4, Raymond-buildings, Gray's-inn, W.C.——Mr. Paul Hoffmann, architect, has removed from Palmerston-house to new offices at Capel-house, New Broad-street, E.C.

LIVERPOOL, OLD AND NEW.—A committee has been appointed to celebrate the coming septenary of the granting by King John, on August 28, 1207, of letters patent constituting Liverpool a free borough. The King at the same time conveyed to Henry Fitzwarren de Lancaster an estate near Preston, which belonged to the honour of Lancaster, in exchange for the old town and seaport. The prosperity of Liverpool suffered a temporary decline during Queen Elizabeth's reign, and even three hundred years ago, at the levying of ship money by Charles I., the town was rated at no more than 26*l.*, the rate

levied upon Bristol being 1,000*l.* Of the docks we may mention that the Old Dock, the first after its kind constructed in England, was opened in 1710; it was closed in 1826, when the site was taken for the present Custom House. The Corporation has applied to the Chancellor of the Exchequer for a grant of 100,000*l.* towards the cost of erecting a new custom house near the dock offices recently built on the site of the old George's Dock, originally constructed in 1761-2. The customs now collected in the port amount to six and a half million pounds sterling per annum. The Custom House and the (old) Dock Offices, constituting, together with the Post and Inland Revenue Offices, the imposing block known as the Revenue Buildings (1830), were built at the joint charges of the Government and the Corporation after designs, in the classical style, of John Foster, who, it may be added, was architect of the Exchange Buildings (1809), and Lunatic Asylum near St. John's Church, the churches of St. George (on the site of the ancient castle, built, *teste* Camden, by Roger de Poictiers in or about 1089), St. Mary, for the Indigent Blind School, and St. Luke; and the Scottish church of St. Andrew in Rodney-street: confer also the *Builder* of September 26, 1896, containing No. 1 of our series, "The Architecture of our Large Provincial Towns."

CAMBRIDGE UNIVERSITY.—The Cavendish Laboratory Extension Syndicate has formulated a scheme for the building, at a cost of about 8,000*l.*, of the new laboratory in Free School-lane. For the building fund are available a sum of 2,000*l.* out of the laboratory funds, and a sum of 5,000*l.* given by Lord Rayleigh out of the Nobel prize. Sir Aston Webb, R.A., is appointed reader for the current year on Sir Robert Rede's Foundation, and will deliver the lecture on June 8 in the Senate House.

HOMES OF CELEBRITIES.—A memorial tablet has been affixed to the house, now numbered 144, Kensington High-street, occupied by Sir David Wilkie in 1811-24, to which we adverted in a "Note" on December 25 last.——On Friday, March 22, will be offered for sale New Grove House, on the verge of Hampstead Heath, near the reservoir, which was the home during several years of George du Maurier when a member of the staff of *Punch*.——Queen Margherita of Italy has presented to the citizens of Bologna the house which she bought and granted for the remainder of his life to the late Signor Carducci, poet and expositor of Dante. The gift is conditional upon the preservation of Carducci's library and day-room in their present state, and the conversion of the ground floor into a hall for the delivery of lectures upon literary subjects.

PUBLIC WORKS' AND BUILDINGS, 1907-8.—The Civil Service estimates for the twelve months ending on March 31, 1908, comprise an item of 2,863,132*l.*, a net increase of 72,852*l.*, the principal increase being in respect of one of 34,500*l.* for the Royal parks and pleasure gardens. Amongst the chief works now in progress are the completion of the offices on the Parliament and Great George streets site, Westminster, the Patent Office extension in Furnival-street, Holborn, and the General Post Office extension on the site of Christ's Hospital, Newgate-street. For the last-named the Treasury have appointed Mr. L. G. Mouchel to act as consulting engineer in collaboration with the architect, Sir Henry Tanner, of H.M.'s Office of Works. Messrs. Holloway Brothers will excavate the entire site to a depth of about 26 ft., more or less, throughout for the erection of a boiler-house, a sorting-office 63 ft. high and 312 ft. by 185 ft. on plan, and a public office 201 ft. by 60 ft. and 85 ft. high—all to be constructed after the Hennebique ferro-concrete system, and with two stories underground.

THE ECCLESIASTICAL COMMISSION.—In their report for the twelve months ended on October 31 of last year the Commissioners state that the cost, about 160,000*l.*, of their new offices in Millbank and Great College streets (of which Mr. W. D. Caröe was the architect) was provided out of the income of the Commission in the four years during which building operations lasted. They estimate that the rental of the rooms which they do not occupy will yield 2¾ per cent. interest upon the whole outlay, together with a fair ground rent for the site, which is their own freehold. A sum of 107,000*l.* is set aside to meet benefactions for augmentation of benefices or the provision or improvement of parsonage houses during the current year. We may add that their recently vacated offices, Nos. 9, 10, and 11, Whitehall-place, have been placed in the market. The premises are held upon Crown leases for terms which will expire on July 5, 1918, and were built as part of T. Chawner's scheme, 1818-19, for laying out Whitehall-place.

SOLIDIFIED TAR.—For most purposes the use of coal-tar in its normal state represents a waste of the more volatile constituents known as light oils, and occurring in the proportion of about 10 per cent. In addition to light oils coal-tar contains 25 per cent., more or less, of heavy oils, volatile at higher temperature, and the residual material commonly known as pitch. The usual practice of tar distillers is to remove both the light and the heavy oils from coal-tar, separating these products into their constituents by redistillation and purification, and to sell the pitch for various commercial purposes. A new product of gas-tar is now being introduced, under the name of solidified tar, by the Tar Solidifying and Distilling Company, by whom it is claimed that tar is rendered applicable, at a considerable reduction in cost, to many uses for which liquid tar and pitch are unsuitable, replacing pitch in the manufacture of fuel briquettes as well as in the construction of roads, footpaths, and floors, and generally for waterproofing purposes. From samples of solidified tar which have been submitted to us for examination, we conclude that the new process simply involves the removal of the light oils, wholly or in part, which can readily be accomplished at temperatures ranging between 175 degrees to 340 degrees Fahr. The substances remaining in the still are run into moulds and solidify on cooling. The great advantage of the new product, apart from the reduced cost at which it ought to be sold, is the convenience with which it can be transported and handled.

FIRES IN THE CITY.—The City Coroner (Dr. Waldo, J.P.), in his annual report to the Court of Common Council, states that 122 private and public fire inquiries were held in the City under the Fire Inquests Act. Referring to the usefulness of fire inquests, Dr. Waldo states that the system of personal investigation at the site of the fire has been the means of preventing the overlooking of any cases of fire which should be publicly inquired into, while, at the same time, the cause of many fires has thereby been ascertained, and the holding of unnecessary inquests avoided. It is, he adds, a suggestive and noteworthy fact that during the four years immediately preceding the passing of the Fire Inquests Act there was an annual average of 177 fires, whereas since the coming into operation of the Act there has been a steady decrease, culminating in a total of 122 fires only for the year under review—the lowest on record. There has been a diminution of big fires during the last two years, in spite of the fire risks being greater owing to the storage of a larger amount of inflammable goods in the City. The City Coroner thinks that a careful inquiry into the cause and circumstances of every fire with or without actual loss of life, should be made, not only in the City of London, but throughout the Metropolis, including Southwark. The experience gained by him in the City furnishes a strong argument in favour of giving coroners extended jurisdiction in this direction. In that ancient court of inquiry would be found an organisation fitted for a duty of that kind by tradition and by experience, no less than by the possession of the machinery necessary for such a purpose.

THE BRITISH MUSEUM READING-ROOM.—As mentioned elsewhere, the authorities have decided to close the reading-room on April 15 for a period of at least six months. The room, it appears, has undergone no sort of general repair or renovation since it was opened in May just fifty years ago. It was built in the quadrangle by Sydney Smirke, R.A., in 1855-7; one, now known as the large room, of the old reading-rooms, in the northern block, is still open to the public. The circular room has a diameter of 140 ft., the dome rises to a height of 106 ft. The interior and plan were illustrated in the *Builder* of March 24, 1855; Baker & Fielder's contract amounted to about 100,000*l.* Alfred Stevens, we believe, prepared a scheme for decorating the interior. It seems that the original conception was due to Professor William Hosking's—confer our columns of June 22, 1850, with an illustration, and his pamphlet, "Observations on the Recent Addition of a Reading-Room at the British Museum," fo. 1858.

DUKE OF DEVONSHIRE MEMORIAL.—A fund is opened for the presentation, by non-residents, to Cambridge University of a replica of the statue by Mr. Goscombe John, A.R.A., of the late Duke of Devonshire, Chancellor of the University. Mr. Goscombe John has placed at the committee's disposal his model for the statue now at Eastbourne, of which a casting will be executed in bronze.

THE "AULD BRIG," AYR.—At the meeting on the 11th inst. of Ayr Town Council the minute of meeting of Works Committee, held on February 18 last, containing the resolution of the committee to hand over the Auld Brig to the Preservation Committee, with a view to their proceeding with the work of preservation, with extension of the time required for the work, was approved of by the meeting. The minute also contained the remit to the Burgh Surveyor instructing him to submit to the Auld Brig Sub-Committee plans which he had already prepared for a temporary bridge. The minute of a meeting of Auld Brig Sub-Committee, held on 7th current, showed that the surveyor had submitted plans for a temporary wooden bridge of 8 ft. wide, with spans of 50 ft. The surveyor had stated the estimated cost at 850*l.* The meeting had unanimously agreed to recommend to the Council that the bridge be proceeded with conforming to the plan and specification. The clerk read a letter which he had received on behalf of the Town Council from the Preservation Committee, to the effect that the committee had succeeded in raising the necessary funds, that they were considered sufficient for the preservation of the bridge, and that should the cost exceed the sum of 10,000*l.* the committee would be agreeable to make further efforts to raise additional funds. After some discussion the amendment was declared the finding of the meeting; and it was further resolved that the bridge be now handed over to the committee.

GARDEN CITY CONFERENCE AT MANCHESTER.—On the 11th inst. the Lord Mayor of Manchester (Councillor John Harrop) presided at a Garden City conference held in his parlour at the Town Hall. Among others present were Miss Sybella Gurney, Bishop Welldon, Canon J. Davenport Kelly, the Rev. W. G. Edwards Rees, Alderman Sir James Hoy, Mr. T. C. Horsfall, and Mr. Thomas Adams. Discussing practical opportunities in Manchester, Mr. Adams pointed out the enormous disproportion between the prices of suburban land in Manchester and other towns. Manchester should develop at least 100 or 200 acres in its suburbs, and should raise 100,000*l.* or 200,000*l.* for this purpose. In insisting that each house built outside the radius of 1½ miles from the centre of the city should have not less than 200 sq. yds. of land, Manchester had taken the foremost step of any municipality in the country. The association had the option of land in North Manchester, and he hoped it would not be allowed to be passed over. He believed the Government intended to bring in a Bill to secure, if possible, cheaper money for the development of municipal schemes of such a kind.—Mr. Horsfall defined the Garden City movement as a movement for the limitation of the use of land to a point at which it could be used with healthy results to the community.—Sir James Hoy moved a resolution congratulating the Manchester City Council on its by-law limiting the number of houses on each acre of land, and expressed his sympathy with the scheme.—Canon Davenport Kelly seconded, and showed the danger of drifting into complacent ugliness, from which such efforts as were being made by the association would save the cities. He also asked for an effort to prevent the defacing of new buildings and the defiling of the streets.—The resolution was carried.

LONDON CHAMBER OF COMMERCE AND THE BUILDING ACT.—The London Chamber of Commerce has forwarded, by direction of the Fire Protection Committee of the Manufacturers' Section of the Chamber, a circular letter to the local governing authorities of the metropolis in regard to the London Building Acts (Amendment) Act, 1905. The secretary encloses copies of correspondence which has taken place with the London County Council with regard to their instructions, issued last July, for the guidance of factory owners and others making building applications or submitting proposals to the Council. The Chamber's request that the circular should be modified was refused by the Spring Garden Authorities. The secretary submits that the correspondence shows that owners of property are not fairly dealt with by the London County Council. By the ambiguous and to some extent misleading statements in the circular and by the fusion or confusion of the Factory and Workshop Act, 1901, with the London Building Acts (Amendment) Act, 1905, as if the same conditions applied and were enforceable under both, expensive alterations and provisions may be made by the owner or occupier in respect of one class of property which at the worst could only apply to a factory building, and consequently they may be led to incur needless outlay, inconvenience, and disturbance to business, in ignorance of the fact that they can go to arbitration on the matter. In other instances they may be led to do the work rather than be put to the expense, suspense, and inconvenience of going to arbitration, even when they know they can do so, being unaware of the fact that the suggested provisions of means of escape may not be enforceable in the case of their particular building. As many people may assume that the County Council can impose requisitions which they have no power to do under the Act, it is urged that the circular published in July last should be withdrawn and redrafted in explicit terms, discriminating between the powers and the application of the Factory Act and the Building Acts (Amendment) Act, and amending the principles which the County Council have laid down as a general guide in order that they may be made consistent with the varied scope and application of the two Acts. The Chamber asks for the support of the Borough Councils in this matter.

CHARITABLE BEQUESTS FOR NEW BUILDINGS.—In pursuance of the late Mr. William Whiteley's testamentary dispositions the "Whiteley Homes Trustees" will hold in trust certain sums not exceeding one million sterling for the erection and maintenance of homes for the aged poor, upon freehold lands in the western suburbs of London or the adjacent country, and for the payment

of pecuniary assistance and gifts to the inmates.—It is anticipated that a sum of more than 40,000*l.*, under the will of the late Surgeon-General Loftthouse, of the Crown Hotel, Harrogate, will, after the death of the testator's sister, become available for the building of a church, monumental chapel, parsonage, and schools, either near the Bath Hospital or in Duchy-road, Harrogate; or else for a cottage hospital, or almshouses, at Knaresborough, failing the erection of the church and the other buildings in Harrogate.

FORDINGTON ST. GEORGE CHURCH, DORSETSHIRE.—A fund, to the amount of 7,000*l.*, is opened for the proposed enlargement of Fordington Church, near Dorchester, by an extension of the nave eastwards, and the removal of the chancel erected after the demolition in 1751 of the former chancel. The cruciform church, which retains some Early English and older features, is notable for the carving in the Norman tympanum of the south doorway, representing St. George defeating the infidels at the battle of Antioch. Some question having arisen as to the propriety of the destruction of the subsisting chancel, the Ecclesiastical Commmissioners consent to the matter being submitted to the Consistory Court, provided that the formulated objections of their architect, Mr. W. D. Caröe, shall be at the same time laid before Mr. Chadwyck-Healey, K.C., when application is made to him, as Chancellor of the diocese, for a faculty in that behalf.

AILSA CRAIG.—It is stated that the Marquis of Ailsa has granted to Mr. William Wilson, quarry master, of Glasgow, a thirty years' lease of the right to quarry, from the south and south-east sides of Ailsa Craig, stone for building purposes, granolithic concrete, and paving-setts, and that a staff of supervisors and men, including mechanics and stone-dressers, will be employed sufficient in number to deal with a yearly output of, as is estimated, from 12,000 to 20,000 tons. Ailsa Craig, a favourite haunt and shelter of myriads of sea birds, stands eleven miles due west from Girvan on the coast of Ayrshire. It has a circumference of nearly two miles, and rises to an altitude of about 1,000 ft.; on the summit is a ruined castle or tower three stories high.

NEW EARTH-BORING TOOLS.—The ordinary equipment for boring wells and trial holes in the earth includes augers of different shapes for stiff and loose soils, cylindrical chisels for trimming bore holes, shells for removing débris, and sundry auxiliary appliance. Some of these may be rendered unnecessary by the improvements embodied in the augers invented by Mr. H. Meyer, of Hanover, who makes three forms of boring tools. The first, termed the "Triumph" auger, has a hollow cylindrical body with an Archimedean screw extension terminating in a point with two curved cutting wings, and it is claimed that by its aid two men can in three hours bore in clay or loamy soil a 4-in. diameter hole 30 ft. deep. The second tool is the "Two edged Cylinder Auger," which comprises a hollow cylinder with two large slots opposite to one another, and from the bottom of the cylindrical body project cutting edges of concave form. This tool is specially adapted for boring in rich soils, sand, and gravel, and is chiefly employed for holes of large size up to 24 in. diameter. The two augers mentioned are already extensively used in various countries, and encouraged by their success, Mr. Meyer has more recently introduced his "Universal" auger, also with a cylindrical body, provided with a slot which can be closed by a slide when required. When borings are being made in dry earth, clay, loam, gravel, sand, and other materials, the slot is left open, but in boggy soil the slot is closed and a valve box is screwed on. Then the hollow body is filled with material by rotation, the valve closes automatically directly the apparatus begins to be lifted, and the contents are brought safely to the surface. The "Universal" auger is fitted with two cutting blades, which are disposed so that the tool cannot get fixed in the ground but cuts itself free, and in consequence can be easily raised to the surface.

Capital and Labour.

CONDITION OF THE BUILDING TRADES.—Employment in February improved in spite of bad weather, and is now better than a year ago. Returns from 895 firms, employing 52,592 workpeople at the end of February, showed an increase in the number of employed of 3·2 per cent., as compared with a month ago. While there was a general increase in the number of skilled workmen employed, the increase in the case of labourers was smaller in proportion and less general. Employment was dull in most branches of the building trade, but moderate with plumbers. Bricklayers, plasterers, and slaters reported a slight improvement, and masons in Scotland reported a decline, compared with both a month ago and a year ago. Compared with a year ago carpenters and joiners reported an improvement, and plumbers a considerable improvement. The percentage of unemployed trade union carpenters and joiners in the United Kingdom at the end of February was 7·9, as compared with 8·2 a month ago, and 9·5 a year ago. The percentages unemployed of trade union plumbers for the same periods were 7·3, 6·7, and 12·1 respectively. The improvement in both branches compared with a year ago was general throughout the various districts.

Legal.

APPEAL FROM DECISION OF THE TRIBUNAL OF APPEAL.

THE case of the South Eastern and Chatham Railway Companies' Managing Committee and others *v.* the London County Council came before a Divisional Court of King's Bench, consisting of Justices Darling and Kennedy, on the 18th inst., on the appeal of the London County Council from a decision of the Tribunal of Appeal.

Mr. Horace Avory, K.C., and Mr. R. C. Glen appeared for the appellants; and Mr. Macmorran, K.C., and Mr. Mellor for the respondents on the appeal.

Mr. Avory, in opening the case, said he appeared for the London County Council in support of the appeal from a decision of the Tribunal of Appeal, and the case came before the Court on a special case stated by the Tribunal of Appeal under the London Building Act, 1894. The question in dispute arose under sects. 22 to 31 of the London Building Act, 1894, and the special case was stated to enable the London County Council to appeal from the decision. The respondents had appealed to the Tribunal of Appeal from the decision of the Superintending Architect defining what was called the general line of buildings in a street, under sect. 22 of the Act of 1894. Under that section, upon being called upon by anyone to do so, the Superintending Architect was bound to define what was the general line of buildings in a street, and then all persons building in that street had to conform to that line. Their lordships would bear in mind that under the section there had been numbers of decisions, the result of which was shortly this. It was a condition precedent to anyone being convicted of building beyond the general line of buildings that the architect should have defined the general line, but he might do that at any time before the magistrate's decision was given. He might do it even after the summons was issued and before the magistrate had given his decision. The magistrate had no discretion to review the decision of the Superintending Architect. Under sect. 25 of the same Act the local authority or any person deeming himself aggrieved by the certificate of the Superintending Architect might appeal to the Tribunal of Appeal, and on such appeal being brought the Tribunal of Appeal could vary the certificate of the Superintending Architect. They might say that the line was different from the one the Superintending Architect had laid down, but as soon as they had given their decision it was equally binding upon all parties, and any person who built beyond that line would be committing an offence under the Act. Sect. 31, which was the only other material section of the Act, provided as follows:—"Nothing in this part of the Act shall affect the exercise of any powers conferred upon any railway company by any special Act of Parliament for railway purposes." Stated shortly, what the Tribunal of Appeal had done in this case was this. The Superintending Architect being called upon to define the building line in a street called the Crystal Palace-parade had laid down the line. The railway companies had appealed to the Tribunal of Appeal from that certificate of the Superintending Architect, and they said to the Tribunal of Appeal that the laying down of the line by the Superintending Architect would affect the exercise of their powers conferred upon them by their special Act of Parliament. The Tribunal of Appeal had taken that view and had allowed the appeal of the railway companies; that was to say they had quashed the certificate of the Superintending Architect on that ground. That was the decision which he (counsel) said was wrong. He submitted that the decision of the Tribunal of Appeal had proceeded altogether upon a misapprehension, The only appeal which was given to them was that under sect. 25. That meant, of course, an appeal by a person aggrieved whose rights would be or might be interfered with or restricted by the certificate. In other words, an appeal by some person who might be prevented from building up to the limit of his land in consequence of the certificate of the Superintending Architect setting the line further back than the limits of his land. Here the railway companies were saying that they were aggrieved by the certificate, not because they would be prevented by the certificate from building up to the limits of their land, but because they were exempt altogether from the provisions of the Act, and that the Superintending Architect's certificate could not affect them at all, because they were not bound by it. The proper course for the railway companies to have taken was this. As soon as they were summoned for building beyond the line of buildings they could have taken the objection before the magistrate that they were exempt. If that objection was good the magistrate would dismiss the summons. If, on the other hand, they were convicted, they could appeal to this Court. The result of the decision of the Tribunal of Appeal was that there was no general line of building in that street at all then, and anybody could build in that street to any line they liked. If the decision stood it would nullify sect. 22 in every street where a railway company happened to own a piece of land. He submitted that the Tribunal of Appeal had taken a wrong view of the question which arose before them. The only question before them was whether the line which the Superintending Architect had laid down was a proper line. The Tribunal of Appeal could vary that line, but they could not possibly say that there was no line at all because there happened to be a railway company in the street.

Mr. Macmorran, for the respondents, said that the railway companies were the owners of the whole land on the one side of the street, so there was no question of other people building beyond the line. The whole of the land between College road and Farquhar-road belonged to the railway companies. The point he wished to make as to sect. 31 was this. One of the powers conferred by the Act was that the Superintending Architect was to define the line of buildings. Without that nothing could be done. When he laid down that line no magistrate or Court could go behind it. When the case went before the magistrate he had to satisfy himself whether the proposed building was in defiance of the general building line, and if it was the rest followed. Here was a piece of land which formed part of the station. If the effect of the certificate of the Superintending Architect was to expose the company to proceedings before the magistrate which they had to defend, that would make them "persons aggrieved." The companies had authorised the putting up of a coal office on their own land on part of the station, and they had done so on the authority of a decision in the case of "Elliott *v.* the London County Council." This coal office was similar to the construction put up in that case, and was for the same uses and purposes. He submitted that the railway companies could properly do that without bringing themselves within the provisions of sect. 22. It had been decided that where a railway company had acquired land for the purposes of their railway, which for the time being they did not require for their own special purposes, it was lawful for them to let that land for any purpose lawful in itself so long as they did not let it without power to afterwards resume possession of it. The coal office was let by the railway companies on the terms that they could resume possession of it by giving a week's notice to that effect. Therefore there was nothing which would interfere with the powers they claimed to exercise by sect. 31.

Mr. Justice Darling, in giving judgment, said in this case the Superintending Architect had laid down a general line of buildings, acting in doing so by virtue of sect. 22 of the London Building Act, 1894. The railway companies and their managing committees and others thereupon appealed under sect. 25 of the same Act to the Tribunal of Appeal, claiming that they were persons deeming themselves aggrieved by the decision of the Superintending Architect. The companies had put up or meant to put up, he was not sure which, a little office for the sale of coal, or something with regard to coal carried on their line. It could not be said that the Superintending Architect by laying down the line of buildings affected the exercise of any powers conferred upon the railway companies by their special Act. It might be that in consequence of his having laid down the general line of buildings something would hereafter be done which would affect the exercise of the railway companies' powers. But the moment that was done the railway companies had a totally different remedy. They had a remedy by being taken before the magistrate for not going within the building line. The railway companies could then say that what they were required to do would affect their powers, and the magistrate would then say that they were not bound by it, because it would affect the exercise of their general powers. He thought the first alternative was the right one, that there might be a building line, but that where the building line would affect the railway companies' powers, then no order would be made to fix the line to their detriment. He thought the wrong procedure had been adopted, and that the appeal must be allowed.

ALLEGED NEGLIGENT PLUMBING.

IN the Court of Appeal, before the President of the Probate, etc., Division, and Lords Justices Moulton and Kennedy, on the 19th and 20th

insts., the case of Malone *v.* Laskey and another was heard on the application of the defendants for judgment or new trial on appeal from verdict and judgment at the trial before Mr. Justice Darling and a common jury in the King's Bench Division.

Mr. Montague Lush, K.C., for the appellants, said that the trial resulted in a verdict and judgment for the plaintiff for 400*l.* damages in respect of personal injuries sustained by her. The facts of the case were as follows. The defendants were the trustees of the Birkbeck Bank in Southampton-buildings, Chancery-lane, and close by was a house which the trustees let to a person named Weatherley in 1899. Weatherley in 1901 let part of the house to a short-hand writing company, and that company had in their employment as manager and secretary Mr. Malone, the plaintiff's husband. Mr. Malone occupied a portion of the premises as part remuneration for his services to the company, and his wife brought the action against the trustees of the bank, who were in no contractual relation to her or her husband, for damages for personal injuries she had sustained in the following circumstances. There was in the house a lavatory which contained a small water tank, and plaintiff said she was hurt through the block or bracket which had been put in to support the tank falling upon her and by water falling upon her. Plaintiff alleged that in consequence of the accident she had become mentally deranged, and her case was that the tank had been negligently put up. The people who had put up the tank were plumbers, and he (counsel) thought they must be deemed to be in the service of the trustees of the Bank, the head landlords. The plaintiff complained about the tank to her husband, the husband complained to his employers, and they in turn passed on the complaint to the trustees, and the trustees, without any duty to do so as regarded Mr. Malone, sent their plumber to put in new blocks to hold up the tank and make it secure. Plaintiff's complaint was that the plumber was negligent. He submitted that there was no possible legal grounds for making the defendants liable for what had occurred. The other ground put forward by the plaintiff as the cause of the accident was this. The bank trustees had established electric lighting in a building some 40 ft. away from the building in question, and they used from the year 1904 down to the end of January, 1905, oil as the fuel of the engine. Evidence was given at the trial that while the oil was used there was some vibration from the engine and that that contributed to the accident. The learned counsel contended that there was no evidence to support the findings of the jury, and that the verdict was against the weight of the evidence.

Mr. Arthur Powell, K.C., on behalf of the respondent, supported the verdict and judgment in the court below,

At the conclusion of the arguments of counsel, the President, in giving judgment, said he very much doubted whether the fall of the bracket was due to the alleged vibration caused by the engine. But the main point to be decided in the case was the legal position of the parties, assuming it could be shown that the damage caused to the plaintiff was due to the alleged improper working of the engine. So far as he could see there was no contractual relation between the plaintiff and the defendants, and he could not see that the defendants had undertaken any duty towards the plaintiff. For these reasons he thought the verdict and judgment must be set aside, and judgment entered for the defendants.

The Lords Justices concurred, and the appeal was accordingly allowed.

LITIGATION AS TO RECONSTRUCTION OF BRIDGE.

THE case of the Regent's Canal and Dock Company *v.* the London County Council came before Mr. Justice Swinfen Eady in the Chancery Division on the 15th inst., on a motion by the plaintiffs for an *interim* injunction restraining the defendants until the trial or further order from commencing or executing certain proposed works of reconstruction of the bridge by which the City-road crosses the City-road basin of the plaintiffs' canal, or from otherwise altering or interfering with the structure of the bridge. The bridge belonged to the plaintiffs, who had erected it under the powers of a private Act passed in the reign of George III. In 1871 the North Metropolitan Tramway Company obtained Parliamentary powers to construct tramways, and one constructed crossed the bridge in question. That Act, however, expressly reserved all the plaintiffs' rights, but it authorised the company to lay tramways over any bridge in accordance with plans and specifications to be approved by the plaintiffs' engineer or the Engineer to the Board of Trade. The defendants, under the London County Tramways (Electrical Power) Act, 1900, acquired all the tramways of the tramway company, and served notice on the plaintiffs of their intention to alter the bridge in accordance with submitted plans, which involved the demolition of the brickwork and the substitution of an iron girder bridge, which it was said was necessary for the electrification of the tramway, which could not be worked on the overhead system for want of consent by the road authority. The plaintiffs' case was that the alteration was not necessary, and was in contravention of sect. 32 of the North Metropolitan Tramways Act, 1871, by which the defendants were bound.

At the conclusion of the arguments of counsel his lordship held that defendants had power to do the proposed work by sect. 6 of the Act of 1900. Defendants were not bound, he said, by sect. 51 of the Tramways Act, 1870, and sect. 32 of the North Metropolitan Tramways Act, 1871, but they were bound by the general provisions of the Tramways Act, 1870, sect. 26 of which provided that the work would have to be done under the superintendence and to the reasonable satisfaction of the plaintiffs, and in case of a difference sect. 33 provided for the dispute to be settled by a referee appointed by the Board of Trade. In these circumstances he declined to make any order on the motion.

Mr. Eve, K.C., and Mr. Sargant appeared for the plaintiffs; and Mr. Macnaghton and Mr. Attwater for the defendants.

ACTION AGAINST THE LONDON COUNTY COUNCIL.

THE hearing of the case of Corsellis and others *v.* the London County Council concluded before Mr. Justice Neville in the Chancery Division on the 11th inst., an action by the plaintiffs, the lessee and sub-lessee of certain premises situate in the York-road, Wandsworth, for a declaration that a strip of land about 3 ft. in width, immediately in front of Nos. 264 to 292, York-road, was private property and not dedicated to the public. The plaintiffs also claimed an injunction to restrain the defendants from trespassing thereon and also damages.

Mr. Pietersen, K.C., and Mr. Allan appeared for the plaintiffs; and Mr. C. E. Jenkins, K.C., and Mr. Tanner for the defendants.

The plaintiffs' case was that the defendants on April 25 last illegally broke and entered upon certain land and premises of the plaintiffs, which formed part of the forecourts of the houses and shops in question, on the ground that it had been dedicated to the public. By the London County Council Tramways Improvements Act, 1900, the Council were authorised to reconstruct tramways in front of the houses in question and to increase the width of the roadway by decreasing the width of the pathway. Plaintiffs' case was that the defendants had wrongfully reduced the width of the pavement to less than 6 ft., that they had widened the road at the cost of the pavement, and this, the plaintiffs submitted, they had no right to do. Plaintiffs alleged that the strip of land in question was private property, had never been dedicated to the public, but was reserved for the use of the tenants. The defendants by their defence denied that they had acted illegally, that the strip of land in question was forecourt, and said they had not used it wrongfully. Defendants contended that they had executed works which they were entitled to do, and they alleged that the erection of the premises was subject to the strip of land being given up to the public. Defendants further said that what they had done was lawfully done according to their Act of Parliament and with the consent of the Borough Council.

At the conclusion of the arguments of counsel his lordship, in giving judgment, said he had come to the conclusion that the title shown by the plaintiffs was a good title, and they were entitled to the 3 ft. in front of their buildings. The pathway would now be limited to 3 ft. The question was whether the defendants were justified in reducing the width of the footway after an agreement had been arrived at between the defendants and the Borough Council. But this question did not apply in the present case, as the Borough Council had not been joined as defendants. He held that what had been done was outside the provisions of the Act of 1900. Viewing all the circumstances he came to the conclusion that the plaintiffs were entitled to succeed. As he was of opinion that the defendants had acted *ultra vires* in doing what they had done, notwithstanding the consent of the Borough Council, he granted an injunction restraining the defendants trespassing upon the property of the plaintiffs. Plaintiffs were entitled to damages, and he ordered an inquiry as to that.

BREACH OF BUILDING BY-LAWS.

ON the 8th inst., at the County Hall, Derby, before Mr. G. W. Peach and Mr. J. Smedley, Francis Long, builder, Sandiacre, was summoned by Mr. Henry Forman, Assistant Surveyor to the Shardlow Rural District Council, for erecting certain buildings without delivering complete plans, at Sawley, from September, 1906, to January, 1907, and further, for erecting certain buildings without delivering a description of the intended mode of drainage and means of water supply, at Sawley, at the same time.

Mr. J. E. T. Ducker appeared on behalf of the Rural District Council, and called evidence to prove that the original plans of four houses in Hawthorn-avenue, Sawley, submitted by defendant were sent back to him for alterations to be made. These were made, and the plans thereupon approved, but defendant had not built the houses in accordance with the approved plans, nor did he deliver a description of the mode of drainage and means of water supply in accordance with the by-laws made by the Council under sects. 157 and 158 of the Public Health Act, 1875.

Defendant did not deny that he had deviated from the plans, but said the houses were much better than originally shown. He was under the impression that he could make certain deviations.

The Bench said the defendant had broken the by-laws, and he would be fined 10s. and costs in the first case. As the costs were so heavy in the second case he would only be ordered to pay them. This they wished to be understood was a warning to every builder in the district that they could not act in contravention of the by-law. Defendant had 4*l.* 17s. 6d. to pay.—*Nottingham Guardian.*

Patents of the Week.

APPLICATIONS PUBLISHED*.

6,918 of 1906.—L. POPP and G. WEISHEIT: *Manufacture of Tiles, Slabs, and the like of a Composition comprising Fibrous Material and a Hydraulic Binding Agent.*

THIS relates to a process for the manufacture of artificial stone tiles, slabs, or the like from asbestos and other fibrous materials and hydraulic binding substances by means of cardboard machines in which the fibrous materials are heated and treated up to the admission into the supply vat in the same manner as in ordinary cardboard manufacture, and is characterised by the binding substance being uniformly sprinkled or fed into the supply vat in a continuous manner in accordance with the continuous treatment of the pulp on the machine mixed with the fibrous materials and then together brought at once from the perforated drum to the felt band and to the removing roll.

11,835 of 1906.—B. E. D. KILBURN (SKANSKA CEMENT GJUTERIET CO.): *Manufacture of Concrete and like Pipes.*

This relates to a method for the moulding of reinforced pipes of concrete or the like, and is characterised by a wire or metallic band being introduced helically from within by means of a rotating mandrel into the wall of the pipe before it is pressed, the cut produced into the pipe material being afterwards closed by the compression of the material.

16,104 of 1906.—A. DIEDESHEIMER and F. JURSCHINA *Manufacture of Artificial Stones, Bricks, or like articles.*

This relates to a method or process for the manufacture of artificial stones, bricks, and the like articles from siliceous materials, and is characterised in that the said material is intimately mixed in ground condition with clay and water, and with the clay and water is progressively introduced together as a sludge during the mixing operation.

19,016 of 1906.—J. RAPPOLD: *Presses for Moulding Bricks, Blocks, and the like.*

This relates to a press for moulding bricks, blocks, and the like, comprising an intermittently rotating mould table with two press heads arranged opposite to each other, and it is characterised by the material being subjected to a preliminary compression by one of the press heads and a final compression by both press heads, said press heads being mounted on firmly journalled one-armed levers near the point of rotation of the said levers, and means being provided to cause first one press head to be raised alone and then allowed to fall against the lower head, and then to effect the final compression between both members' heads actuated together in such manner that their free ends move towards each other to effect a high pressure between the press heads on the material to be compressed.

20,467 of 1906.—G. E. SOPER: *Crane.*

This relates to a portable crane, and consists in constructing the frame and itsu pright or mast and boom as one piece or body, the mast being

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

PATENTS.—*Continued on page 381.*

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competition, iv.; Contracts, iv. vi. viii. x.; Public Appointments, —; Auction Sales, xxviii.

Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements: and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.

Competitions.

* NO DATE.—**Edinburgh.**—BUILDINGS.—The Committee of the Scottish National Exhibition, Edinburgh, 1908, invite competitive designs for buildings. Two premiums of 100*l.* and one of 75*l.* Conditions of competition and plan of ground to be obtained from the secretary, Mr. James Marchbank, 45, York-place, Edinburgh, on payment of 1*l.* 1s.

NO DATE.—**Edinburgh.**—MANSES AND CHURCH BUILDINGS.—The Special Building Committee of the United Free Church of Scotland invite designs for the construction of manses and church buildings in certain districts in the Highlands. Conditions of competition may be had from Mr. J. T. S. Watson, Secretary, Special Building Committee, 1, Castle-terrace, Edinburgh, on deposit of 2*l.* 2s.

Contracts.

BUILDING.

MARCH 23.—**Felixstowe.**—VILLAS.—For the erection of a pair of semi-detached villas, with stables, at Felixstowe. Copies of plans, etc., may be had by applying to Mr. W. J. Westwood-Dent, architect and surveyor, 21, Larkspur-terrace, Newcastle-on-Tyne, before March 23. A deposit of 2*l.* 2s. must accompany application.

MARCH 23.—**Harrogate.**—VILLAS.—Erecting pair of villas (with stables) at Harrogate. Apply for plans, etc., to Mr. W. J. W. Dent, architect and surveyor, 21, Larkspur-terrace. Newcastle-on-Tyne, enclosing deposit of 2*l.* 2s.

MARCH 23-APRIL 13.—**Maidstone.**—SCHOOL.—Maidstone Education Committee invite tenders for the erection of a new Elementary School at the Cherry Orchard, Tonbridge-road. Application for bills of quantities, etc., to be made at the office of the Borough Surveyor (Mr. T. F. Bunting), Fair Meadow, on or before March 23. A copy of the quantities and form of tender will be supplied to those who have made application in exchange for 2*l.* 2s. Sealed tenders to be sent to office of Mr. S. Lance Monckton, Town Clerk.

MARCH 23.—**Walker-on-Tyne.**—REBUILDING HOTEL.—For rebuilding Victoria Hotel, Walker-on-Tyne, for Mr. Alex. Deuchar. Names to Messrs. T. A. Page & Sons, architects, South Shields, on or before March 23.

MARCH 25.—**Antrim.**—CHURCH.—The Committee of High-street Presbyterian Church, Antrim, invite tenders for reconstruction of church. Drawings, etc., at office of Mr. Archibald M'Kay, Secretary to Committee, 20, Church-street, Antrim, or at the office of the architect, Mr. N. Fitzsimons, A.R.I.B.A., 13, Lombard-street, Belfast.

MARCH 25.—**Bath.**—SHELTER, ETC.—The Corporation of Bath invite tenders for erecting a shelter and lavatories at Alexandra Park, Bath. The plans can be inspected, and copies of the specification, etc., obtained, at the office of Mr. Silvanus White, Surveyor of Corporate Property, Guildhall, Bath.

MARCH 25.—**Edinburgh.**—CATTLE BYRES.—For taking down and re-erecting cattle byres and cow sheds at the Cattle Market, Lauriston, according to plans and specification, which may be seen at Public Works Office, City-chambers, Edinburgh, where also schedules of quantities may be obtained on personal application.

MARCH 25.—**Hull.**—FOUNDATIONS AND BASEMENT.—Hull Property Committee invite tenders for the erection of foundations and basement, forming part of the proposed shops on south side of Jameson-street. Drawings, etc., may be seen at office of Mr. Joseph H. Hirst, City Architect, Town Hall, Hull, and quantities obtained upon a deposit of 2*l.* 2s. Tenders to be addressed to the Chairman of the Property Committee.

MARCH 25.—**Lytham.**—SLAUGHTER-HOUSES.—Lytham U.D.C. invite tenders for all the works in connection with the erection of new slaughter-houses, in accordance with the drawings, etc., prepared by the Surveyor to the Council, Mr. Price, and which may be seen at his office. Tenders to be delivered at the office of Mr. Chas. A. Myers, Clerk to the Council.

MARCH 25.—**Methlick.**—SCHOOL ADDITIONS.—The School Board of Methlick invite tenders for the mason, carpenter, glazier, smith, plumber, plasterer, and slater works of proposed additions and alterations, Methlick Public School. The plans, etc., may be seen with Mr. James Allan, Clerk to the School Board, Methlick, and Messrs. Kelly & Nicol, architects, 367, Union-street, Aberdeen. Schedules of quantities may be obtained from the architects. Sealed tenders are to be lodged with Mr. Allan.

MARCH 25.—**Pontypridd.**—RESIDENCE.—A detached residence and outhouses on the Eglwysilan-road, Pontypridd. Names to Mr. T. E. Richards, A.R.I.B.A., architect, Market-square-chambers, Pontypridd, accompanied by a deposit of 1*l.* 1s., by March 25.

MARCH 25.—**Witney.**—WAREHOUSE.—The mason's, joiner's, and slater's works required in the erection of a warehouse and carding-shed at Mount Mills, Witney, Oxon. Quantities may be obtained from Messrs. Kirk & Sons, architects, Dewsbury.

MARCH 26-APRIL 8.—**Bedlington.**—SCHOOL.—Northumberland Education Committee invites tenders for the work of erecting a new Council School to accommodate 200 scholars at Bedlington. Name and address to Mr. C. Williams, Secretary to the Education Committee, not later than March 26, together with a deposit of 2*l.* 2s. Plans of the work may be inspected at the Committee's Offices, and tenders must be forwarded to Mr. C. Williams, Secretary to the Education Committee, not later than 3 p.m. on April 8.

MARCH 26.—**Blackburn.**—WAREHOUSE.—Lancashire and Yorkshire Railway Directors invite tenders for the construction of a new warehouse at Bolton-road Goods Yard, Blackburn. Plans can be seen, and copies of the form of tender, etc., obtained, at the engineer's office, Hunt's Bank, Manchester. Tenders to be delivered to Mr. R. C. Irwin, Secretary, Hunt's Bank, Manchester.

MARCH 26.—**Cardiff.**—EXTENSION OF INFIRMARY.—For extensions of the Cardiff Infirmary to form a new out-patients' department, in accordance with plans, etc., to be seen at the office of the architect, Mr. Edwin Seward, F.R.I.B.A., Queen's-chambers, Cardiff, from whom bills of quantities may be obtained on payment of cheque for 2*l.* 2s. Tenders are to be delivered to Mr. Leonard D. Rea, Secretary and General Superintendent.

MARCH 26.—**Hitcham.**—HOUSE.—Eton R.D.C. Sanitary Committee invite tenders for the erection upon land at Hitcham of a house for the Sewage Works Superintendent. Plans, etc., may be seen, and bill of quantities, etc., obtained, on payment of a deposit of 2*l.* 2s., at the office of the engineer, 160, High-street, Slough. Sealed tenders to be delivered to the Clerk to the Council, Mr. R. H. Barrett, solicitor, Stacey House, Slough.

MARCH 26.—**Leeds.**—EXCHANGE.—Tenders are invited (whole trades) for the alterations to business premises, Briggate, Leeds, for the purpose of an exchange, *café*, offices, etc. Quantities may be obtained from Mr. Percy Robinson, F.R.I.B.A., architect, *Yorkshire Post* Chambers, 33, Albion-street, Leeds, on deposit of 1*l.* 1s. Tenders are to be delivered at the architect's office.

MARCH 26.—**Port Talbot.**—PREMISES.—New premises, Station-road, Port Talbot, for Messrs. Griffiths & Sons, clothiers, Newport, Mon., to whom tenders are to be sent. Plans and specification may be seen at the offices of the architect, Mr. Richard O. Clark, C.E., architect and surveyor, Port Talbot. Bills of quantities may be obtained from the architect, and also from Mr. Charles Miles, Quantity Surveyor, Central-chambers, Newport, on payment of 1*l.* 1s.

MARCH 27.—**Barrow-in-Furness.**—CHIMNEY.—Barrow-in-Furness Corporation invite tenders for the erection and completion of a 50-yds. chimney, flue, etc., at the refuse destructor. Plans may be seen, and specifications, etc., obtained, on application at the Borough Engineer's Office, Town Hall.

* MARCH 27.—**Felixstowe.**—RESIDENCE.—Tenders are invited for erection of residence at Felixstowe for Mr. C. Stebbing. Names should be sent to Mr. H. W. Buxton, Victoria-chambers, The Parade, Felixstowe, not later than March 27, when a selection will be made.

MARCH 27.—**Golcar.**—LYCH GATE.—The erection of a lych gate, St. John's Church, Golcar. Plans may be seen, and quantities obtained, at office of Mr. Arthur Shaw, architect, Golcar.

MARCH 27.—**Halifax.**—EXTENSION OF OFFICE BLOCK.—Tenders are invited for the several works comprised in the extension of office block at Clark Bridge Mills, Halifax. Plans, etc., will lie for inspection, and bills of quantities may be obtained, at offices of Mr. W. Clement Williams, architect, 29, Southgate, Halifax, from March 20 until March 27, on which last-named day tenders are to be delivered.

MARCH 27.—**Huddersfield.**—PREMISES.—Police-court Mission and Labour Home, proposed new premises, The Shore, Huddersfield. Plans to be seen, and bills of quantities obtained, at offices of Mr. W. Cooper, F.R.I.B.A., 4, Kirkgate-buildings.

MARCH 27.—**Huddersfield.**—STABLE.—The erection of a nine-stalled stable at Watergate Brewery, Huddersfield. Plans may be seen, and bills of quantities obtained, at office of Mr. J. Berry, architect and surveyor, 3, Market-place, Huddersfield.

MARCH 27.—**Mountain Ash.**—SCHOOL.—The Glamorgan C.C. invite tenders for the laying of foundations for temporary County School buildings at Mountain Ash. Plans, etc., may be seen, and copies of the bill of quantities, etc., obtained, at the Mountain Ash Police-station, and at offices of Mr. T. Mansel Franklen, Clerk of the C.C., Glamorgan C.C. Offices, Westgate-street, Cardiff.

MARCH 28.—**Belfast.**—LIBRARY.—Belfast Corporation invite tenders for the erection of a branch library on the Donegall-road. Plans, etc., may be seen at the office of the architects, Messrs. Graeme-Watt & Tulloch, 77A, Victoria-street, and copies of the bill of quantities obtained from Mr. S. C. Hunter, Scottish Provident Buildings, on payment of a deposit of 1*l.* 1s. Tenders to be lodged with Mr. Saml. Black, Town Clerk.

MARCH 28.—**Huddersfield.**—SHOPS, OFFICES, ETC.—Converting the warehouse property in John William-street, Huddersfield, into shops, offices, and small warehouses. Drawings, etc., to be seen, and bills of quantities obtained, at offices of Messrs. John Kirk & Sons, architects, John William-street, Huddersfield.

MARCH 28.—**Norwood Green.**—MISSION CHURCH.—The erection of a mission church at Norwood Green. Plans may be seen, and bills of quantities obtained, at offices of Messrs. Howorth & Howorth, architects and surveyors, Old Bank-chambers, Cleckheaton, from March 21 to March 28.

MARCH 28.—**Rosehaugh.**—STEADING.—The mason, carpenter, plumber, slater, and painter works of new steading at Rosehaugh. The plans and specifications may be seen with Mr. John Wittet, architect, Elgin, with whom offers must be lodged.

MARCH 29.—**Bangor.**—MANSE.—The Committee of the First Bangor Presbyterian Church invite tenders for the erection of a manse on the Maxwell-road, Bangor, according to plans and specifications prepared by Mr. Ernest L. Woods, architect, Bangor, County Down, to whom application for inspection of plans and specifications may be made. Tenders will be received by the architect.

MARCH 29.—**Ramsicombe.**—HOUSE.—The erection of a dwelling-house at Ramsicombe, in the Parish of Botusfleming, Cornwall, for Mr. S. G. Renfree. Messrs. J. Kittow & Son, surveyors, etc., Launceston, will receive tenders until March 29.

MARCH 30.—**Ashbourne.**—GRAMMAR SCHOOL.—The Governors of Queen Elizabeth's Grammar School, Ashbourne, Derbyshire, invite tenders for all the works required in connexion with the erection of a new grammar school at Ashbourne. Plans, etc., may be seen, and bills of quantities obtained (upon deposit of 2*l.* 2s.) from the Architect to the Governors, Mr. E. M. Longsdon, Bakewell. Tenders are also required for the heating of the above building with hot water. Plans, etc., can be seen at the office of the Architect, who will supply a duplicate copy of the plan on payment of a fee of 5s. (not returnable) for each copy. Sealed tenders to be delivered to Mr. H. F. Gibson, Clerk to the Governors, Ashley, Ashbourne, or sent by post on or before March 30.

MARCH 30.—**Dublin.**—ADDITIONS TO LIBRARY.—Corporation of Dublin invite tenders for proposed additions to the Public Library at Charleville Mall, in accordance with plans, etc., prepared by the City Architect, which may be inspected at his office, Municipal-buildings, Cork Hill, Dublin, between the hours of 11 a.m. and 4 p.m. Copies of bills of quantities, etc., may be obtained at the office of the City Treasurer, Municipal-buildings, Cork Hill, Dublin, on payment of 2*l.* Tenders, addressed to "The Chairman of the Public Libraries Committee."

MARCH 30.—**Havercroft.**—HOUSES.—The erection of three dwelling-houses at Havercroft. Plans, etc., may be seen at Mr. Herbt. Fisher's house, Rose Cottage, Ryhill.

MARCH 30.—**Stainland Dean.**—HOUSE, ETC.—The mason's, joiner's, plumber's, grey slater's, plasterer's, painter's, and concretor's works required in the erection of dwelling house, stable, etc., at Radcliff Delph, Stainland Dean. Plans may be seen, and quantities obtained, from March 20 to March 30. Mr. Sam Norcliffe, Firth House Mills, Stainland Dean.

APRIL 1.—**Burton-on-Trent.**—FENCING, ETC.—The General Committee of Staffordshire Agricultural Society's Exhibition, 1907, invite tenders for the erection of wood or canvas and wood fencing (as may be determined); also shedding, with loose boxes or partitions for stock and implements; also a grand stand, etc., in the showyard at Burton-on-Trent, on July 17 and 18 next. Forms of tender, etc., may be obtained from the Secretary, Mr. J. P. Jones, Newcastle, Staffordshire.

APRIL 1.—**Knockando.**—SCHOOL WORKS.—The mason, carpenter, plumber, slater, and plaster works of new porch and improvements at Knockando School. The plans, etc., may be seen with Mr. John Wittet, architect, Elgin.

APRIL 1.—**Pluscarden.**—HOUSE.—The mason, carpenter, plumber, slater, and plaster works of new house to be erected at Easter Fosterseat, Pluscarden. The plans, etc., may be seen with Mr. John Wittet, architect, Elgin.

APRIL 1.—**Port Logan.**—LIFEBOAT HOUSE.—The Hon. Secretary of the Royal National Lifeboat Institution, Port Logan Branch, invites tenders for the construction of a stone lifeboat house for the Royal National Lifeboat Institution on a site adjacent to the foreshore in Port Logan Bay, near Stranraer, in the county of Wigtown, N.B. Contract drawings, terms and conditions, etc., may be seen on application to Mr. Matthew M'Clumpha, Hon. Secretary, Auchabrick, Port Logan, R.S.O., Wigtownshire, or at the office of the engineer and architect to the Royal National Lifeboat Institution, Mr. W. T. Douglass, 15, Victoria-street, Westminster, S.W. Copies of the form of tender, etc., may be obtained on application to the engineer and architect upon payment of a deposit of 1*l.* 1s. Copies of certain of the plans may be obtained from the engineer and architect on payment of 2s. 6d., which sum is non-returnable.

APRIL 2.—**Brithdir.**—HOUSES, ETC.—The construction of roads and surface water drains, and also the erection of ninety-seven houses at Brithdir, for the Cefn Brithdir Building Company (Limited). Drawings, etc., may be seen, and bills of quantities of the roads only obtained, at office of Mr. J. Llewellin Smith, M.S.A., architect, Aberdare, from March 15 to 28 inclusive. Tenders to be sent to the Secretary

of the Company, Mr. H. Seymour Berry, auctioneer, 30, Victoria-street, Merthyr Tydfil.

APRIL 2.—**Cork.**—HOUSES.—The erection of three dwelling houses near Wellington Bridge, Cork, in accordance with plans, etc., prepared by Mr. W. H. Hill & Son, architects, South Mall, Cork, with whom tenders are to be lodged.

APRIL 2.—**Kinsale.**—HOUSES.—Kinsale U.D.C. will, at meeting to be held on April 2, consider tenders for the erection of a terrace of ten houses at the World's End, Kinsale, in accordance with plans, etc., prepared by Mr. J. W. Dorman, C.E., which may be seen at his offices, Fisher-street, Kinsale, or at the Council's Offices, Court House, Kinsale. Tenders to be lodged with Town Clerk.

APRIL 2.—**Ton Pentre.**—ALTERATIONS, ETC., TO VESTRY.—Alterations and additions to vestry of Jerusalem Welsh Calvinistic Methodist Chapel, Ton Pentre, Rhondda Valley, for the trustees. Plans, etc., may be seen, and bills of quantities obtained, at office of Mr. W. D. Morgan, M.S.A., Architect, Post Office-chambers, Pentre, on payment of a deposit of 1*l.* 1s. Tenders to be delivered to Mr. D. J. Davies, 21, Queen-street, Ton Pentre.

✱ APRIL 3.—**Homerton.**—PAVILION.—Hackney Guardians invite tenders for erection of Pavilion "D" at the infirmary, High-street, Homerton, N.E. Specification, conditions of contract, and plans may be seen at the Clerk's Office, and bills of quantities and form of tender will be supplied after March 20. Sealed tenders, endorsed "Pavilion 'D,'" to be delivered at the Clerk to the Guardians' Office, Hackney Union, Homerton, N.E., not later than 2 p.m. on April 3.

APRIL 4.—**Edinburgh.**—POST-OFFICE.—The Commissioners of H.M. Works and Public Buildings invite tenders for the erection of the superstructure of Edinburgh General Post Office, extension. Drawings, etc., may be seen on application to Mr. W. T. Oldrieve, H.M. Office of Works, Edinburgh. Bills of quantities and forms of tender may be obtained at H.M. Office of Works, Edinburgh, on payment of 1*l.* 1s. Tenders to the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W.

✱ APRIL 4.—**Hendon.**—COTTAGES.—The Midland Railway Company invite tenders for erection of a pair of cottages at Hendon. Plans and specifications may be seen, and particulars and quantities obtained, from the Engineer's Office, Derby Station, on and after March 25. Sealed tenders by post to the Secretary of the Way and Works Committee, Midland Railway, Derby, not later than 9 a.m. on April 4.

APRIL 4.—**Llanallgo and Rhoscolyn.**—SCHOOL.—The erection of a new Council school at Llanallgo, and also for out offices at the Rhoscolyn Council School, for the Anglesey Education Committee. Plans, etc., may be seen at the respective schools, and also at office of Mr. Jos. Owen, F.R.I.B.A., County Architect, Menai Bridge and Holyhead. Tenders, on forms, which will be supplied on application, to be delivered to Mr. R. H. Williams, Secretary of Education, Education Offices, Llangefni.

APRIL 4.—**Newcastle-upon-Tyne.**—SCHOOL ADDITIONS.—The Education Committee invite tenders for additions and alterations at the Westmoreland-road Council Schools. Plans, etc., may be seen, and bills of quantities and form of tender obtained, at the City Property Surveyor's Department, Town Hall, on payment of 2*l.* 2s. to the City Treasurer.

APRIL 5.—**Cwmdu, Penybont, etc.**—SCHOOL WORKS.—Carmarthenshire Education Committee invite tenders for the following:—(1) Erection of new Council School at Cwmdu; (2) general repairs, Penybont Council School; (3) general repairs, Trelech Village Council School. Last day for receiving tenders April 5 next. (Mr. W. D. Jenkins, F.S.I., County Education Architect.)

APRIL 5.—**Swineshead.**—CHURCH.—The Trustees invite tenders for the erection of new Wesleyan Church, at Swineshead, Lincolnshire. Application for quantities to be made to the architect, Mr. A. E. Lambert, 22, Park-row, Nottingham. Plans can be seen at the Rev. J. W. Keyworth's, Buxton Villa, Queen's-road, Boston, to where sealed tenders must be sent.

✱ APRIL 9.—**Hertfordshire.**—NEW SCHOOL, ETC.—The Education Committee of the Herts. C.C. invite tenders for a new Council School, Fleetville, St. Albans, and additions, etc., to Technical School, Bishops Stortford. Drawings, specification, agreement, etc., can be seen at the County Surveyor's office, Hatfield, on and after March 26. A copy of schedule of works and quantities and form of tender can be obtained at the County Surveyor's office on payment of 2*l.* 2s. in each case. Sealed tenders, endorsed "Tender for New School, Fleetville," and "Tender for Additions and Alterations to Bishops Stortford Technical School," must be delivered separately to Mr. Urban A. Smith, County Surveyor, Hatfield, before 5 p.m., April 9.

✱ APRIL 9.—**Petersfield.**—POST-OFFICE.—The Commissioners of H.M. Office of Works are prepared to receive tenders for erection of a new post-office at Bordon Camp, Petersfield. Drawing, specifications, conditions, and form of contract may be seen at the Post-office, Bordon Camp. Bills of quantities and forms of tender may be obtained at the address below. Tenders addressed to the Secretary, H.M. Office of Works, etc., Storey's-gate, S.W., and endorsed "Tender for Bordon Camp Post-office," to be delivered before 12 o'clock noon on April 9.

APRIL 13.—**Coxlodge, Newcastle-on-Tyne.**—COAL SHED.—The Corporation of Newcastle-upon-Tyne invite tenders for the constructions of a coal shed at the City Asylum, Coxlodge. On payment by the contractors of 2*l.* 2s. to the City Treasurer, Town Hall, general conditions, specification, form of tender, and bill of quantities can be obtained, and drawings inspected, at the City Engineer's Office, Town Hall, Newcastle-upon-Tyne. Tenders, with the complete filled-up schedule, addressed to the "Chairman of the Lunatic Asylum Visiting Committee, Committee Clerk's Office, Town Hall, Newcastle-upon-Tyne," and endorsed "Coal Shed," to be sent in before noon on April 13.

✱ APRIL 27.—**London.**—DWELLINGS.—The St. Pancras B.C. invite tenders for erection of dwellings for the working class on a site known as Brantome-place. Drawings, specification, conditions of contract, and form of bond can be inspected at the offices of the architects, Messrs. Joseph & Smithem, 83, Queen-street, Cheapside, E.C. Bills of quantities and form of tender will be forwarded upon deposit of 5*l.* Tenders must be sealed and endorsed "Tender for 'Working-class Dwellings, Brantome-place,'" and are to be addressed to Mr. C. H. F. Barrett, Town Clerk, Town Hall, Pancras-road, N.W., not later than 12 noon, April 27.

NO DATE.—**Evenwood and Ingleton.**—CHURCH BUILDING. For either of the following works:—(1) Proposed alterations to Primitive Methodist Church, Evenwood; (2) the erection of a new Primitive Methodist Church at Ingleton. Names to Davidson & Davidson, architects, Pearl-buildings, Newcastle-on-Tyne.

NO DATE.—**Fairhaven.**—RESIDENCE.—Sole tenders for the erection of a new residence on the Promenade, Fairhaven, for Mr. J. S. Leigh. Names to Mr. Herbert Wade, architect, 27, Birley-street, Blackpool.

NO DATE.—**High Wycombe.**—WORKSHOPS.—The erection of new workshops, etc., Mendy-street, High Wycombe, for Messrs. Goodearl Brothers, Chair Manufacturers. For particulars, etc., apply Messrs. Hooper & Nash, architects and surveyors, Central Offices, Church-square, High Wycombe.

NO DATE.—**Moordown.**—HOUSE.—House to be erected on the Redhill Park Estate, Moordown, for Mr. John J. Norton, J.P. Names to the architects, Lawson & Reynolds, Yelverton-chambers, Bournemouth.

NO DATE.—**Ulverston.**—STABLING.—The erection of a block of stabling and loose boxes to the Sun Hotel, Ulverston, for Messrs. Jas. Thompson & Co., Limited, Barrow-in-Furness. Plans may be seen, specifications, etc., obtained, from J. W. Grundy & Son., architects and surveyors, Central-buildings, Ulverston.

ENGINEERING, IRON, AND STEEL.

MARCH 25.—**Bradford.**—BOILER.—The Bradford Corporation invite tenders for the supply of a new steel Lancashire boiler to the Chemical Works, Frizinghall. General conditions of contract may be seen, and specification, etc., obtained, on application to the City Architect, Whitaker-buildings, Brewery-street, Bradford. Tenders to Mr Frederick Stevens, Town Clerk, Town Hall, Bradford.

MARCH 25.—**Handsworth.**—CABLE.—Handsworth U.D.C. invite tenders for the supply of low-tension distributor cables, lead covered, paper insulated. Specification, etc., can be obtained on application to the Generating Station, Pier's-road, Handsworth. Tenders are to be returned and addressed to Mr. Henry Ward, Clerk to the Council, Council House, Soho-road, Handsworth.

MARCH 25.—**London.**—AIR COMPRESSOR.—The Directors of the Bombay, Baroda, and Central India Railway Company are prepared to receive, up to noon on March 25, tenders for the supply of a motor-driven air compressor. Tenders must be made on forms, copies of which, with specification, can be obtained at offices of Mr. W. V. Constable, Secretary, Gloucester House, 2, 3, and 4, Bishopsgate-street Without, London, E.C., on payment of 10s. 6d. each (which will not be returned).

MARCH 26.—**Caldbeck.**—BRIDGE.—The R.D.C. of Wigton invite tenders for the re-building of Gill Foot Bridge, near Hesket-new-Market, in the parish of Caldbeck. Plans, etc., may be seen at the office of the Surveyor, Kildare, Wigton. Tenders must be sent in to Mr J. F. W. Ritson, Clerk to the Council, Wigton.

✱ MARCH 26.—**Claygate.**—PIPES.—Tenders are invited for about 65 tons 3-in. cast-iron socket and spigot pipes, coated; also for 3-in. specials, delivered at Cold Norton or North Fambridge stations. Tenders to be delivered on or before March 26, addressed "Tender for Pipes," to Messrs. Collingwood & Co., engineers, 12, Hare-lane, Claygate.

MARCH 26.—**Highbridge.**—PUMPING-HOUSE.—Lower Lower Brue District Drainage Board invite tenders for the erection of a pumping house, with concrete walls, 14-h.p. National gas engine, and 8-in. centrifugal pump, adjoining the Somerset and Dorset Railway, at Highbridge, Somerset. Plans, etc., can be inspected at the office of Mr. F. W. Bishop, solicitor, High-street, Bridgwater, Clerk to the Board. Mr. A. J. Amesbury, of Huntspill, Somerset, will show the site and give any information that may be required. A copy of the plan and specification can be obtained on payment of 2*l.* 2s.

MARCH 27.—**Exeter.**—LANDING-STAGE, ETC.—Exeter Corporation invite tenders for the construction of a landing stage, boat house, cellars, and underground conveniences in Commercial-road, adjoining Exe Bridge. Lithograph copies of the City Engineer, and Surveyor's design, etc., may be obtained by applying at Engineer's office, No. 7, Southernhay West, Exeter, and depositing the sum of 2*l.* 2s. Tenders to be sent in addressed to Mr. H. Lloyd Parry, Town Clerk, Exeter.

MARCH 27-APRIL 3.—**London.**—STEEL BARS, ETC.—The East Indian Railway Company invite tenders for the supply and delivery of:—(1) Mild steel bars; (2) helical and volute springs; (3) laminated springs; (4) crank and straight axles; (5) paper, stationery, etc.; (6) brass boiler tubes; (7) copper plates and rods, as per specifications to be seen at the company's offices. Tenders are to be sent to Mr. C. W. Young, Secretary, Nicholas-lane, London, E.C. For each specification a fee of 1*l.* 1s. is charged, which cannot under any circumstances be returned.

MARCH 27.—**Walthamstow.**—PLANT.—Walthamstow U.D.C. invite tenders for the supply of water-softening plant to their Sanatorium, Larkswood Farm, Chingford. Further particulars can be obtained on application to Mr. G. W. Holmes, A.M.Inst.C.E., Town Hall Annexe, Walthamstow, the Council's Engineer.

MARCH 30.—**Bewcastle.**—BRIDGE.—Longtown R.D.C. invite tenders for the erection of a bridge at the Crook, in the parish of Bewcastle, in the county of Cumberland. Plans, etc., can be seen at office of Mr. C. B. Hodgson, Clerk to the Council, The Courts, Carlisle, and further particulars may be obtained from Mr. James Murray, surveyor, Kirklinton, Carlisle. Tenders, on forms to be had from Clerk, must be lodged at his office.

MARCH 30.—**Worsley.**—PUMP.—Worsley U.D.C. invite tenders for a sludge pump and oil engine (in separate contracts) for their Barton Sewage Works. Particulars and form of tender may be obtained on application to the Surveyor, Mr. J. Howard, Council Offices, Walkden. Tenders to be sent in to Mr. J. Phethean Monks, Law Clerk, Council Office, Walkden.

APRIL 2.—**Rochester.**—ADDITIONS TO PIER.—Rochester Corporation invite tenders for carrying out certain additions to the Rochester Esplanade Pier. Plans, etc., can be seen on application to Mr. William Banks, A.M.Inst.C.E., City Surveyor, Guildhall, Rochester. Tenders to be delivered at offices of Mr Apsley Kennette, Town Clerk, Guildhall, Rochester.

APRIL 4.—**Prestwich.**—LAUNDRY MACHINERY.—Prestwich Guardians invite tenders for the supply and erection at their new Infirmary, Charlestown-road, Blackley, of:—(*a*) Laundry machinery; (*b*) cooking utensils. Specifications may be obtained on application to Messrs. T. Worthington and Sons, architects, 46, Brown-street, Manchester. Tenders addressed to Mr. Edward W. Ogden, Clerk to the Guardians, Union Offices, Cheetham Hill-road, Manchester, and delivered not later than 10 a.m. on April 4.

APRIL 5.—**Croydon.**—GAS-ENGINES.—Croydon Corporation invite tenders for the supply and erection of two gas-engines and pumps for pumping sewage sludge in connexion with the new works of sewage disposal, Beddington. Spesification, etc., may be obtained on application at the office of the Borough Engineer, Town Hall, Croydon, upon payment of a deposit of 1*l.* 1s.

APRIL 11.—**Copenhagen.**—MOTOR-GENERATORS.—The Corporation of Copenhagen require tenders for the delivery of three motor-generators or convertors, each of 1000 K.W. Specification, etc., may be had on application to Elektrisk Station, Gothersgade, 30, Copenhagen K, on payment of 30kr. Tenders must be sent to Direktoren for Belysningsvoesnet, Raadhuset, Kjobenhavn B.

APRIL 30.—**Withington.**—HEATING.—Chorlton Guardians invite tenders for the completion of the heating scheme at the Withington Workhouse. Plans, sections, and specifications may be obtained at the offices of Charles Clegg & Son, architects, 21, Spring-gardens, Manchester, upon payment of 10*l.* Sealed tenders, enclosed in the official envelope, to be delivered to Mr. David S. Bloomfield, Clerk to the Guardians, Union Offices, All Saints', Manchester, not later than 5 p.m. on April 30.

NO DATE.—**Turton.**—TRAMWAY.—Turton U.D.C. want about 400 yards contractor's tramway, 20-in. gauge, and tip waggons, new or second-hand. Forward full particulars and price delivered at Turton Station, near Bolton. Mr. J. B. Goulburn, Clerk to the Council, Council Offices, Bromley Cross, near Bolton.

MISCELLANEOUS.

MARCH 25.—**Clay Cross.**—SCAVENGING.—Clay Cross U.D.C. invite tenders for the emptying of ashpits and the removal of night soil and house refuse in District No. 2 Old and New Danesmoor and No. 6 Eldon-street Long Rows, etc. (Mr. J. H. Hirst, Clerk.)

MARCH 28.—**Liskeard.**—RAISING, ETC., STONE.—Liskeard R.D.C. invite tenders for raising, breaking, hauling, and spreading stones for the repairs of the highways. Tenders to be sent to the Clerk's office, West-street, Liskeard.

MARCH 30.—**Stanley.**—TEAM LABOUR.—Stanley U.D.C. invite tenders for team labour. Forms of tender may be had on application to Mr. Geo. Ingle, Surveyor, Council Offices, Coach-road, Outwood.

✱ APRIL 5.—**Greenwich.**—RAILINGS, ETC.—The Greenwich B.C. invite tenders for:—(*a*) Enclosing with iron railing (about 759 ft.), utilising as much of the existing railing as possible, for enlarging Greenwich Cemetery; (*b*) for enclosing the north and south boundaries with 6 ft. 6 in. oak park pale fence (about 751 ft.); (*c*) for enclosing the western boundary with 6 ft. 6 in. oak park pale fence. Plans can be seen at the offices of the architect, Mr. Alfred Roberts, 92, London-street, Greenwich. Specification and form of tender can be obtained at the Town Hall on payment of 1*l.* 1s., and must be sealed up and endorsed "Tender for Railings," and sent to Mr. F. Robinson, Town Clerk, Town Hall, Greenwich, S.E., before 12, April 5.

APRIL 9.—**Maldon.**—STEAM-ROLLERS.—Maldon R.D.C. invite tenders for the hire of two steam-rollers for the year ending March, 1908. For particulars apply to Mr. Edgar J. Ennals, 6, Market-hill, Maldon, Essex.

APRIL 30.—**Cheltenham.**—ROAD ROLLER.—Tenders invited for a petrol or steam road-roller designed especially for rolling small patches of macadamised roads. Tenders to be delivered by April 30, 1907. For further particulars apply to Mr. J. S. Pickering, Borough Surveyor, Cheltenham.

PAINTING, etc.

MARCH 25.—**Dewsbury.**—PAINTING.—The Gas, Electricity, and Water Committee of the Dewsbury Corporation invite prices for painting the cottages and offices at the Gas Works. Information may be obtained from Mr. Chas. A. Craven, Manager.

MARCH 26.—**Truro.**—PAINTING.—Truro Guardians invite tenders for the painting of the whole of the exterior iron and wood work of the Union Workhouse, Infectious Hospital, and gates, in accordance with a specification to be seen at office of Mr. Fras. Truscott, Clerk, Truro Union Office, in Truro. Tenders should be sent to Clerk.

MARCH 27.—**Dublin.**—PAINTING.—Dublin and South-Eastern Railway Directors invite tenders for the painting of Beresford-place Viaduct, Liffey Bridge and George's Quay, roofs of Westland-row Railway Station. Specification and form of tender can be had on application to Mr. S. J. Shannon, No. 1, Westland-row, Dublin. Tenders, marked "Painting Contract," and addressed to Mr. M. F. Keogh, Secretary, Secretary's office, Westland-row, Station, Dublin, to be forwarded so as to be received not later than 10 a.m. on March 27.

MARCH 27.—**Kingstown.**—PAINTING.—Painting work, Kingstown Technical Schools. Specification to be seen at office of Mr. Geo. T. Moore, civil engineer and architect, 1 and 2, Foster-place, College Green, Dublin.

APRIL 3. — **Walton.** — PAINTING. — West Derby Guardians invite tenders for painting all outside woodwork and iron works at the Workhouse, Ricelane, Walton, Liverpool. For particulars apply to the Master of the Workhouse.

APRIL 8.—**Stanwix.**—PAINTING.—Stanwix Burial Board invite tenders for outside painting at Stanwix Cemetery. Specifications may be seen, and the work pointed out, on application to the Curator. Tenders to be delivered to Mr. Wm. Dobinson, Clerk of the Board, 10, Bank-street, Carlisle.

NO DATE.—**Carlton.**—PAINTING.—The painting of twelve cottages in Leadwell-lane, Carlton. Apply, Joseph Horner, Thorpe, near Wakefield.

ROADS, SANITARY, AND WATER WORKS.

MARCH 25.—**Basford.**—SEWERS.—Basford R.D.C. invite tenders for construction of about 350 yds. of pipe sewers, manholes, etc., in the parish of Greasley. Conditions, etc., obtained at the office of Mr. S. Maylan, Engineer and Surveyor to the Council, Public Offices, Nottingham-road, Basford, on deposit of cheque for 1*l.* 1s. Tenders to be delivered to Clerk.

MARCH 25.—**Bilton.**—STREET IMPROVEMENTS.—Harrogate Corporation invite tenders for the private street improvement works required in streets off Sykes'-grove, Bilton. Tenders must be submitted not later than 9 a.m. on March 25. (Mr. F. Bagshaw, Borough Engineer and Surveyor.)

MARCH 25.—**Mountain Ash.**—APPROACH ROAD.—Mountain Ash U.D.C. invite tenders for the provision of all the materials and for the execution of the work required to be done in making, excavating, filling, forming, metalling, approach road to Abercynon Cemetery. Plans, etc., may be seen, and form of tender, etc., obtained, on application to the Surveyor to the Council, Town Hall, Mountain Ash. Sealed tenders to be sent to Mr. H. P. Linton, Clerk to the Council, Town Hall, Mountain Ash.

MARCH 25.—**Redcar.**—SALT-WATER WORKS.—Redcar U.D.C. invite tenders for:—(1) For removing the engine-house on the Promenade, and building a new cement concrete engine-house on the same sight; (2) for about 1,763 yds. of cast-iron spigot and socket-water pipes, with stand-posts, hydrants, covers, valves, etc.; (3) one Otto gas engine (or other approved make), and pump to pump 6,000 gadons per hour. About 463 yds. of 6-in. iron flanged and faced suction and delivery pipes. Plans, etc., of the various works can be seen at the Council Offices, 2, West-terrace, Redcar, on application to Mr. James Howcroft, the Surveyor.

MARCH 25.—**Wigton.**—ROAD MAINTENANCE.—The R.D.C. of Wigton invite tenders for letting of the maintenance of the roads in the several quarters of the district, and of furnishing for all material for the same. Offers will be received only on printed forms of tender, which may be had from the Surveyor, Mr. W. Brown, Kildare, Wigton. Tenders must be sent to Mr. J. F. W. Ritson, Clerk to the Council, Wigton.

MARCH 26.—**Burslem.**—MAKING-UP.—Burslem Corporation invite tenders for the making-up of back Emery-street and back Grange-street. Plans, etc., can be seen, and quantities obtained, at the Borough Surveyor's Office, Queen-street, on payment of 2*l.* 2s.

MARCH 26.—**Salford.**—PAVING, ETC., STREETS.—Salford Corporation invite tenders for sewering, paving, and flagging certain streets. The plans may be seen, and forms of tender, etc., obtained, at the Borough Engineer's Office, Town Hall, Salford.

MARCH 27.—**Barrow-in-Furness.**—STREET WORKS.—Barrow Corporation invite tenders for the construction of portion of Back Holker-street. Further particulars, etc., may be obtained at the office of the Borough Engineer, Town Hall.

MARCH 27.—**Luddenden Foot.**—ROAD WORKS.—Luddenden Foot U.D.C. invite tenders for the paving, kerbing, flagging, and making good a certain portion of Booth House-road. Form of tender and other particulars may be obtained on application to Mr. J. Stockwell Bottomley, Surveyor. All tenders must be sent to his office.

MARCH 27.—**Seaforth.**—SEWERING, ETC., ROADS.—The U.D.C. of Waterloo-with-Seaforth invite tenders for works of sewering, flagging, kerbing, channelling, paving, asphalting, etc., in passages at the rear of Nos. 105 to 150, at the side of No. 132, and at the rear of Nos. 132 to 150, Sandy-road, Seaforth. Plans, etc., may be seen, and bills of quantities, etc., obtained, on application to Mr. F. Spencer Yates, A.M.Inst.C.E., the Surveyor to the Council, at the Town Hall, Waterloo. The sum of 10s. 6d. must be deposited for quantities. Tenders addressed to the Chairman of the General Purposes Committee, Town Hall, Waterloo.

MARCH 27.—**Twickenham.**—STREET IMPROVEMENT WORKS.—Twickenham U.D.C. invite tenders for the works in connexion with forming, levelling, etc., the following streets within the district of Twickenham:—(1) Bridge-road; (2) Carnac-road; (3) Laurel-avenue; (4) Lebanon-park; (5) Radnor-road. Plans, etc., can be seen on application at the office of Mr. Fred. W. Pearce, F.S.I., Surveyor to the Council, Town Hall, Twickenham, and payment of 1*l.* 1s. Sealed tenders to be delivered to Mr. H. Jason Saunders, Clerk to the Council, Town Hall, Twickenham.

MARCH 28.—**Stockport.**—STREET IMPROVEMENTS.—Stockport Highways Committee invite tenders for the manual and team labour and materials required in excavating, sewering, forming, paving, kerbing, and flagging the following streets within the borough, namely:—Longford-road, Lewis-road, Welland-street; passages Nos. 1, 2, and 3, situate off Gorton-road, North Reddish. Plans, etc., may be seen, and forms of tender obtained, on application to Mr. John Atkinson, A.M.Inst.C.E., Borough Surveyor, Borough Surveyor's Office, Stockport.

APRIL 1.—**Cushendall.**—SEWERAGE.—The Ballycastle R.D.C. invite tenders for the completion of a scheme for the sewerage of the town of Cushendall. Plans, etc., have been prepared by Mr. T. J. O'Neill, the Engineer, and may be inspected at the offices of the District Council, Ballycastle. Tenders to be deposited with the Clerk, and should be addressed to the Chairman of the Council. Copies of tender can be obtained from Mr. Hugh M'Gill, Clerk of District Council, Ballycastle, and Messrs. P. & J. Boyle, Solicitors for said Council, Ballymoney.

✱ APRIL 2.—**Bedworth.**—PRIVATE STREET WORKS.—The Foleshill U.D.C. invite tenders for levelling, metalling, kerbing, channelling, paving, and making good a portion of Back-lane, Collycroft, Bedworth. Plans, sections, and specifications may be seen on application to Mr. A. E. Newey, Surveyor, Council Offices, Foleshill. Sealed tenders endorsed "Tender for Making Back-lane," to be sent to Mr. A. P. Oswin, Clerk, Council Offices, Foleshill, not later than April 2.

APRIL 2.—**Caerphilly.**—STREET WORKS.—Caerphilly U.D.C. invite tenders for paving, asphaltic tarpaving, kerbing, channelling, flagging, etc., of Castle-street and Cardiff-road (part), Caerphilly. Plan, etc., may be seen, and forms of tender obtained, at the Surveyor's Department, Council Offices, Caerphilly, upon depositing the sum of 1*l.* 1s.

APRIL 2.—**Truro.**—PAVING.—Truro City Council invite tenders for paving the carriage way of St. Mary's-street, an area of about 1,280 super. yds., with creosoted deal blocks. Plans may be seen, and specification, etc., obtained, on application at office of Mr. Measham Lea, A.M.Inst.C.E., City Surveyor, City Surveyor's Office, Truro. Sealed tenders received by City Surveyor.

APRIL 3.—**Birkenhead.**—ROAD-MAKING.—For the making and completing of Baytree-road, Grasville-road, Linwood-road, Ye.verton-road, and Wycherley-road. Plans, etc., may be seen, and form of tender, etc., obtained at the office of Mr. Charles Brownridge, M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Birkenhead, upon depos t of the sum of 10s.

APRIL 3.—**Hornsey.**—ROAD WORKS.—Hornsey T.C. invite tenders for sewering, leve ling, paving, metalling, kerbing, channelling, and making good the roadway at the rear of Victoria-parade (1st section), Muswell Hill. Forms of tender, etc., and particulars can be obtained from Mr. E. J. Lovegrove, Borough Engineer and Surveyor, Municipal Offices, Highgate.

APRIL 3.—**Rutherglen.**—SEWERS.—The Rutherglen Joint Sewer Committee invite tenders for the construction of about 685 lin. yds. of egg-shaped brick sewers and about 2,692 lin. yds. of glazed fire-clay pipe sewers. Drawings at the office of the engineers, Messrs. Warren & Stuart, 94, Hope-street, Glasgow, from whom forms of tender, etc., may be obtained on payment of 1*l.* 1s. An assistant engineer will meet intending offerers at Shawfield Toll, Rutherglen, on March 27, at 11 o'clock.

APRIL 3.—**Ulverston.**—WATER WORKS.—The R.D.C. of Ulverston invite tenders for the works necessary in the construction of water works at Coniston. Plans, etc., can be seen, and any information obtained, on application to the Council's Engineer at the offices of the Council, Town Hall, Ulverston. Tenders to Mr. Charles W. Dean, Clerk to the Council, Town Hall, Ulverston.

APRIL 4.—**Salford.**—SALFORD CORPORATION invite tenders for 12-in., 9-in., and 6-in. earthenware pipes sewer, with manholes, etc., at Springfield-lane and Dean-road, for the Health Committee. Plans may be seen, and forms of tender, etc., obtained, at the Borough Engineer's Office, Town Hall, Salford.

APRIL 6.—**Dunham Massey.**—SEWERAGE WORKS.—Bucklow R.D.C. invite tenders for the construction of works of sewerage, within the township of Dunham Massey. Plans, etc., can be seen, and bill of quantities, etc., obtained, on application to Mr. J. P. Wilkinson, M.Inst.C.E., at his offices, 301, Cathedral-street, Manchester, and on deposit of the sum of 2*l.* 2s. Tenders must be delivered to Mr. George Leigh, Clerk to the R.D.C., Union Offices, Knutsford, Cheshire.

APRIL 6.—**Perth.**—SEWER.—The Perth T.C. invite tenders for the construction of a new main sewer, 24 in. diameter, along Gray-street and proposed streets in Pickletillum Estate to Viewlands-road. Plan, etc., can be seen, and schedules of quantities obtained, at the office of Mr. R. M'Killop, Burgh Surveyor, 16, Tay-street, Perth. Tenders to be lodged with Mr. John Begg, Town Clerk, City Chambers, Perth.

APRIL 6.—**Skye.**—WATER SUPPLY.—Materials and works in connexion with a water supply for the village of Broadford, Skye. Plans, etc., may be had from Mr. Jas. A. H. MacKenzie, architect and surveyor, Portree.

APRIL 9.—**Bishop's Stortford.**—FILTER BEDS.—The Bishop's Stortford U.D.C. invite tenders for the construction of new filter beds at their sewage farm. Plans, etc., can be seen by appointment at the office of the Surveyor to the Council, Mr. R. S. Scott, A.M.Inst.C.E., 7, North-street, Bishop's Stortford.

✱ APRIL 10.—**Kingston.**—ROADS.—The Kingston-upon-Thames Corporation invite tenders for levelling, paving, metalling, flagging, channelling, and sewering Burton-road, in accordance with plans and specifications by the Borough Surveyor, which can be seen at his office, where form of tender can be obtained. Sealed tenders, endorsed "Tender for Burton-road," to be sent to the Town Clerk, Municipal Offices, Kingston-upon-Thames, not later than April 10.

APRIL 10.—**Tunstall.**—SEWAGE WORKS.—Tunstall U.D.C. invite tenders for certain additions to their Sewage Purification Works, situate at Tunstall, Staffs, according to plans prepared by their engineers, Mr. Charles J. Lomax, A.M.I.C.E., 37, Cross-street, Manchester, and Mr. A. R. Wood, Surveyor to the U.D.C., Tunstall. Specifications, etc., may be obtained on the payment of a deposit of 3*l.* 3s., and the drawings inspected at the office of Mr. Lomax, until March 25. The drawings may also be inspected at the office of Mr. Wood, Town Hall, Tunstall, on March 26 until March 28. A duplicate copy of the specification, etc., may be obtained from the engineers on the payment of a fee of 5s., which will not be returned. Tenders to be sent to Mr. Arthur P. Llewellyn, Solicitor, Clerk to the Council, Tunstall, Staffs, not later than 10 o'clock on April 10.

APRIL 12.—**Aldershot.**—RESERVOIR.—Aldershot Gas and Water Company invite tenders for the construction of a covered service reservoir and appurtenances at the Company's Reservoir Grounds, Cargate-hill, Aldershot. Copies of tender, etc., may be had on application to Mr. R. W. Edwards, Secretary and General Manager, Chief Offices, Victoria-road, Aldershot, accompanied by a deposit of 2*l.* 2s, and drawings may be inspected at the office of the Consulting Engineers, Messrs. John Taylor, Sons, & Santo Crimp, Caxton House, Westminster, S.W. Tenders to the Secretary.

APRIL 13.—**Badenoch.**—ROAD WORKS, ETC.—Tenders are invited by the Badenoch District Committee for the upkeep of roads and bridges. Specification, etc., required annually may be had from Mr. John Mackenzie, District Surveyor, County Buildings, Kingussie.

APRIL 19.—**Oldbury.**—SEWERS.—The U.D.C. of Oldbury invite tenders for taking up and reconstructing about 503 lineal yards of 18-in., 12-in., and 9-in. pipe sewers (including cast-iron pipes under canal), together with reconstruction of manholes, also laying about 800 yards of 12-in. pipe sewers, with new manholes, and other works. Plans and specification may be seen, and bills of quantities and form of tender obtained, at the offices of the engineer, Mr. John T. Eyres, M.Inst.C.E., Clarence-chambers, 39, Corporation-street, Birmingham, on production of a receipt for a deposit of 2*l.*, which must be paid to the Council's Treasurer, Mr. E. H. Wedgwood, Lloyds Bank, Oldbury. Tenders to be delivered at office of Mr. William Shakespeare, Clerk to the Council, Public-buildings, Oldbury, on or before April 19, sealed and endorsed "Sewers Reconstruction Contract, No. 6."

NO DATE.—**Bedrule.**—DAM.—The construction of a dam across the Rule Water, on Wells Estate, near Bedrule, in the County of Roxburgh. Plans and specification can be seen, and copy of bill of quantities obtained, from Messrs. Thomas Meik & Sons, 29, St. Andrew-square, Edinburgh.

NO DATE.—**Fishponds, Bristol.**—ROAD SEWERS, ETC.—The construction of road sewers, surface-water drains, manholes, boundary walls, and works of excavation and hauling at Fishponds, Bristol. All particulars of Mr. Alfred J. Saise, A.M.Inst.C.E., Civil Engineer and Surveyor, Eagle-buildings, Nicholas-street, Bristol.

NO DATE.—**Nottingham.**—SEWERAGE.—Sewering part of Breck Hill Freehold Land Association, Mapperley Plains, Nottingham. Apply to Mr. John Lamb, surveyor, Ashbourne-chambers, Bridlesmith-gate, Nottingham.

NO DATE.—**West Melton.**—DRAIN.—For laying in a 2-ft. drain. For particulars apply the Cortonwood Collieries Company, Ltd., West Melton, near Rotherham.

STONE, MATERIALS, AND STORES.

MARCH 23.—**Maidstone.**—MATERIALS.—Kent C.C. Bridges and Roads Committee invite tenders for the supply of:—Shovels, forks, scavenging brooms, scoops, scrapers, cart grease, tallow, oil, and other tools and materials. Particulars may be obtained on application to the County Surveyor, West Borough-chambers, Maidstone. Sealed tenders to be sent to Mr. W. B. Prosser, Clerk to the C.C., Sessions House, Maidstone.

MARCH 23.—**St. Helier.**—PAVING BLOCKS.—The Corporation of St. Helier, Jersey, invite tenders for the supply of 37,000 creosoted deal paving blocks. Tenders and samples to be sent to the Town Hall, St. Helier. For specifications, apply to the Town Architect, Mr. H. Le Masurier, Town Hall, St. Helier, Jersey.

MARCH 25.—**Bognor.**—SUPPLIES.—Bognor U.D.C. invite tenders for the supply of flints, gravel, cement, road rolling, and timber. Specifications, etc., may be obtained from Mr. Oswald A. Bridges, Council Surveyor, Bognor. Tenders to be delivered to Mr. Henry Layton Staffurth, Clerk to the Council, Council Offices, Bognor.

MARCH 25.—**Felixstowe.**—MATERIALS.—Felixstowe and Walton U.D.C. invite tenders for the supply and delivery of the following materials for one year, viz.:—Asphalt, castings, forage, Portland cement, steam coal, stoneware pipes, team labour, timber. Specifications, etc., may be obtained on application to Mr. H. Clegg, Assoc.M.Inst.C.E., Surveyor to the Council, Town Hall, Felixstowe. Sealed tenders should be delivered at office of Mr. F. B. Jennings, Clerk to the Council, Town Hall, Felixstowe.

MARCH 25.—**Salford.**—CAST-IRON PIPES.—Salford Corporation Electricity Committee invite tenders for the supply of cast-iron pipes. Drawing, specification, and form of tender, etc., may be obtained on application at the office of the Borough Electrical Engineer, Frederick-road, Pendleton. Sealed tenders, endorsed "Tender for Cast-iron Pipes," to be delivered at office of Mr. L. C. Evans, Town Clerk, Town Hall, Salford.

MARCH 25.—**Stanley.**—DISINFECTANTS.—Stanley U.D.C. invite tenders for the supply of disinfecting powder, fluid, and soap for year ending March 31, 1908. Forms of tender may be obtained from Mr. John Geo. Ridley, Clerk to the Council, Stanley, R.S.O., Co. Durham.

MARCH 25.—**Thornaby-on-Tees.**—STORES.—Thornaby-on-Tees Corporation invite tenders for the supply of materials, stores, etc. Specifications may be seen, and forms of tender, etc., obtained, on application at the Borough Engineer's Office, Town Hall.

MARCH 25.—**Tynemouth.**—DRAIN PIPES, CEMENT, ETC.—Tynemouth Corporation invite tenders for supplying drain pipes, cement, bar and other iron, plumbers' materials, scavengers' brooms, spades, and other tools and general stores. Forms of tender can be obtained at the office of Mr. John F. Smillie, Borough Surveyor.

MARCH 25.—**Warrington.**—BRASS COCKS.—Warrington Water Committee invite tenders for the supply of brass cocks and ferrules. Full particulars may be had from Mr. James Deas, Water Engineer, Municipal Offices, Warrington.

MARCH 26.—**Ashford.**—MATERIAL.—West Ashford R.D.C. invite tenders for the supply and delivery of gravel, flints, and Kentish rag stone. Full particulars and forms of tender may be obtained from Mr. Alfred Sims, Surveyor, Surveyor's Office, Charing. Tenders, addressed to the Chairman of the R.D.C., are to be delivered at the Union House, Westwell.

MARCH 26.—**Guildford.**—CEMENT.—Guildford T.C. invite tenders for the supply of Portland cement for the ensuing twelve months. Specifications and forms of tender may be obtained at the office of the Borough Surveyor, Mr. C. C. Mason, A.M.Inst.C.E., Tunsgate, Guildford.

MARCH 26.—**Guildford.**—HORSE HIRE, ETC.—Guildford Corporation invite tenders for the supply of

horse hire for watering and other purposes, including the cartage of road materials within the district. Forms of tender may be obtained on application to Mr. C. G. Mason, C.E., the Borough Surveyor, at his office in Tuns Gate, Guildford. Tenders are to be sent to Mr. F. S. Miller, Town Clerk, Town Clerk's Office, Bridge-steet, Guildford.

MARCH 26.—**Guildford.**—ROAD MATERIAL.—Guildford Corporation invite tenders for flints for road materials. Forms of tender may be obtained on application to the Borough Surveyor, Mr. C. G. Mason, A.M.I.C.E., at his office, Tuns Gate, Guildford. Tenders to be sent to Mr. F. S. Miller, Town Clerk, Town Clerk's Office, Bridge-street, Guildford.

MARCH 26.—**King's Lynn.**—ROAD MATERIALS.—King's Lynn Corporation invite tenders for the supply of road materials to March 31, 1908. Particulars can be obtained on application to Mr. J. H. Webb, Borough Surveyor.

MARCH 26.—**Llantrisant.**—SCAVENGING.—Llantrisant and Llantwit Fardre R.D.C. invite tenders for scavenging the various districts within their area. Tenders will only be received on the Council's printed forms, and these may be obtained on application to Mr. Gomer S. Morgan, Surveyor to the Rural District Council, School-street, Pontyclun. Tenders must be delivered to the Clerk of the District Council.

MARCH 26.—**Malling.**—MATERIALS, ETC.—Malling R.D.C. invite tenders for materials, team labour, steam rolling, and workmen's tools. Full particulars etc., may be obtained upon application to Mr. John Marshall, surveyor, West Malling. Sealed tenders are to be delivered at the Council's Offices, West Malling.

MARCH 26.—**Mountain Ash.**—SCAVENGING.—Mountain Ash U.D.C. invite tenders for the scavenging of the Ynysybwl Ward. Specification may be seen, and form of tender obtained, on application to the Surveyor to the Council, Town Hall, Mountain Ash. Tenders to be sent to Mr. H. P. Linton, Clerk to the Council, Town Hall, Mountain Ash.

MARCH 26.—**Oystermouth.**—ROAD MATERIALS.—The Oystermouth U.D.C. invite tenders for the following requirements, viz.:—(1) Supply of road material; (2) gravel; (3) haulage. Particulars, with forms of tender of Nos. 1, 2, and 3, can be obtained on application to the Surveyor to the Council, Council Offices, Mumbles. Tenders to be sent to Mr. Jno. H. Robinson, Clerk to the Council, Council Offices, Mumbles.

MARCH 26.—**Riverhead.**—STREET WATERING.—Riverhead P.C. invite tenders for street watering. For information, etc., apply to Mr. Councillor Hayter, Riverhead. Tenders to be sent to the Clerk of the Council, Mr. W. D. Weth, Clerk to the P.C., Riverhead.

MARCH 26.—**Rochford.**—HOUSE REFUSE, ETC.—Rochford R.D.C. invite tenders for the removal of house refuse from the dwelling houses in the various portions of their district. Forms on application. Tenders must be sent to Mr. Frederic Gregson, Clerk, Southend-on-Sea, marked "Tender for House Refuse."

MARCH 26.—**Rochford.**—SEWER CLEANSING, ETC.—Rochford R.D.C. invite tenders for the following work:—To manage, empty, and cleanse from time to time the Council's filter beds, sewage tanks, and sewage pits at Rochford, and for other work. Contractors will be under the supervision of the Council's Inspector of Nuisances (Mr. C. E. Judd, Rayleigh), from whom any further information may be obtained. Tenders must be sent to Mr. Frederic Gregson, Clerk, 46, Alexandra-street, Southend.

MARCH 27.—**Bicester.**—STORES.—The Bicester R.D.C. invite tenders for the supply for road repairs of navvy barrows, shovels, spades, forks, bagging hooks, pickaxes, scrapers, brooms, reels and pins with line, rakes, and hacks. Specifications of Mr. Eames, Surveyor, Oxford House, Bicester, Oxon.

MARCH 27.—**Llantrisant.**—HAULAGE.—Llantrisant and Llantwit Fardre R.D.C. invite tenders for haulage of water carts. Specification, etc., may be obtained on application to Mr. Gomer S. Morgan, Surveyor, School-street, Pontyclun. Tenders must be delivered to the Clerk of the Council, Mr. W. Spickett, Solicitor, Pontypridd.

MARCH 27-APRIL 3.—**London.**—STORES.—The East Indian Railway Company invite tenders for the supply and delivery of:—(1) Mild steel bars; (2) helical and volute springs; (3) laminated springs; (4) crank and straight axies; (6) brass boiler tubes; (7) copper plates and rods, as per specifications to be seen at the company's offices. Tenders are to be sent to Mr. C. W. Young, Secretary, Nicholas-lane, London, E.C. For each specification a fee of 1*l.* 1s. is charged, which cannot under any circumstances be returned.

MARCH 28.—**Chatham.**—MATERIALS.—Chatham T.C. invite tenders for the supply of road materials. Specifications, etc., can be obtained, and sample of the Kentish ragstone headers seen, on application at the Borough Surveyor's Office, Town Hall, Chatham.

MARCH 28.—**Lytham.**—MATERIALS.—Lytham U.D.C. invite tenders for the supply of materials. Specifications, etc., may be obtained at the office of the Surveyor, Mr. A. J. Price.

MARCH 28.—**Ramsey.**—GRANITE.—The Ramsey U.D.C. invite tenders for the supply of 550 tons of broken granite (450 tons XX size and 100 tons XXX size), to be delivered to the stations at Ramsey (G.N. or G.N. and G.E. Joint) from April to December next. Tenders, accompanied by samples. No forms of tender are issued.

MARCH 28.—**Sheffield.**—WOOD BLOCKS.—Sheffield Highway and Sewerage Committee invite tenders for the supply and delivery of 1,000,000 redwood blocks. Particulars, etc., may be obtained, and samples inspected, at the office of Mr. Charles F. Wike, City Surveyor, Town Hall, Sheffield, on payment of the sum of 1*l.* 1s. Tenders, addressed to the Chairman of the Highway and Sewerage Committee, to be delivered at the City Surveyor's Office.

MARCH 28.—**Thakeham.**—ROAD MATERIAL.—Thakeham R.D.C. invite tenders for the supply of road material for the repair of highways, and for cartage of the same to the various roads. Full particulars, etc., may be obtained from Mr. Wm. Forrester, surveyor, Storrington, Sussex. Tenders must be sent to Mr. Arthur Flowers, Clerk, Council Offices, Storrington, Pulborough.

MARCH 29.—**Croft.**—STONE.—Croft R.D.C. invite offers to supply broken and unbroken whinstone, also ironworks' slag and annealed slag. Tenders are also invited for leading stones. Forms of tender for leading, and any other information, may be obtained on application to the Surveyor, Mr. John Hodgson, North Cowton. Tenders to Mr. Chas. H. Leach, Clerk to the Guardians, Darlington.

MARCH 29.—**Port Glasgow.**—METERS.—Port Glasgow T.C. invite offers for the supply of prepayment and ordinary gas meters required in connection with their gas works. Sealed offers to be lodged with Mr. Andrew Paton, Town Clerk, Port Glasgow.

MARCH 29.—**Winchcomb.**—HAULAGE.—Winchcomb R.D.C. invite tenders for the hauling of materials. Forms of tender, etc., may be had of Mr. Thomas Smith, the District Surveyor, Winchcomb.

MARCH 30.—**Chester.**—CARTING.—Cheshire C.C. invite tenders for carting macadam and other materials for the main roads. Forms of tender, etc., at the County Surveyor's Office, Chester Castle. Tenders to be delivered at the said office.

MARCH 30.—**New Windsor.**—STORES.—New Windsor Corporation invite tenders, from local tradesmen only, for the supply of tools and ironmongery. The forms of tender may be obtained upon application at the Borough Surveyor's Office, Alma-road, Windsor. Tenders to be sent in to Mr. E. A. Strickland, Borough Surveyor, Alma-road, Windsor, not later than March 30.

MARCH 30.—**Newbury.**—FLUSHING SEWERS.—Newbury R.D.C. invite tenders for provision of a horse and man at per day for carting water when required for the purpose of flushing the sewers, and to attend to the outlet. The work is to be done under the direction of Mr. Walter Church, the Sanitary Inspector and Surveyor of the Council, Newtown-road, Newbury, from whom any further information can be obtained. Tenders must be sent to the Clerk, Mr. S. V. Pinniger.

MARCH 30.—**Pocklington.**—STONE.—Pocklington R.D.C. invite tenders for the supply of best blue stone and slag for repairing the roads throughout the whole of their district for the current year. Forms of tender, etc., can be obtained from Mr. Thomas Robson, Clerk, Pocklington.

APRIL 1.—**Cork.**—CAST-IRON PIPES.—Cork Waterworks Committee invite tenders for the supply of spigot and faucet water supply pipes. Forms of tender and specification may be obtained on application to Mr. D. F. Giltinan, Secretary of Committees, etc., by whom sealed tenders, endorsed "Tender for Water Pipes," will be received not later than April 1.

APRIL 1.—**Huddersfield.**—MATERIALS.—Huddersfield Corporation invite tenders for the supply and delivery of road materials, etc. Specifications, etc., may be obtained on application at the offices of Mr. K. F. Campbell, M.Inst.C.E., M.I.E.E., Borough Engineer and Surveyor, 1, Peel-street. Sealed tenders to be addressed "Town Clerk, Town Hall, Huddersfield."

APRIL 1.—**Little Crosby.**—GAS STANDARDS.—The Little Crosby U.D.C. invite tenders for the supply of twelve gas standards, fitted with lanthorns and control draft oil container and burners. Tenders to be sent to Mr. A. T. Brunskill, Clerk to the Council, 34, Clarendon-road, Egremont, Cheshire.

APRIL 1.—**Manchester.**—STORES.—Lancashire and Yorkshire Railway Company Directors invite tenders for the supply of the company's ordinary requirements of articles during the twelve months ending April 30, 1908. Further particulars, etc., may be obtained on application to Mr. Waring, Stores Department, Osborne-street, Manchester. Tenders, addressed to the Directors, must be lodged with the Secretary, Hunts Bank, Manchester.

APRIL 1.—**Steyning.**—GRANITE.—Steyning West R.D.C. invite tenders for the supply of 900 tons of broken granite. Forms of tender may be obtained at the office of the Surveyor to the Council, Mr. Frederick Slaughter, Steyning.

APRIL 2.—**Norton.**—SCAVENGING.—Norton R.D.C. invite tenders for the emptying of ashpits, etc., in the parishes of Dore and Totley. Tenders to be addressed to Mr. Thomas Smith, Clerk to the Council, Offices, The Edge, Sheffield.

APRIL 2.—**Tendring.**—FLINTS AND GRANITE.—The Tendring R.D.C., Essex, invite tenders for the supply of flints and granite. Tenders to be sent to Mr. J. Bell, Highway Surveyor, Great Bentley, Colchester.

APRIL 3.—**Dorchester.**—STORES.—Dorchester T.C. invite tenders for the supply of ironmongery and tools, etc., and the supply of disinfectants. Further particulars and forms of tender may be obtained on application to the Borough Surveyor.

APRIL 3.—**Margate.**—ROAD MATERIAL.—Margate Corporation invite tenders for road material. Forms of tender and copy of specification can be obtained on application to Mr. E. A. Borg, C.E., Borough Surveyor, Town Hall, Margate, to whom samples must be sent.

APRIL 3.—**Rochester.**—STONE.—The Justices and Commissioners of Sewers for the limits extending from Gravesend Bridge to Sheerness, and thence along the River Medway to Penshurst, in Kent, will receive tenders for supplying the several levels within the Commission with rag stone, and the North-west level in Grain and Cliffe Level with large block stones of 2cwt. or upwards each. Mr. E. L. Baker, Clerk to the Commission, The Precinct, Rochester.

APRIL 3.—**Ticehurst.**—MATERIALS.—Ticehurst R.D.C. invite tenders for the supply and delivery of about 1,070 tons 2-in. broken granite, 1,540 yds. 2½-in. broken Sevenoaks stone, and 2,700 tons broken and unbroken ragstone. Forms of tender may be obtained upon forwarding stamped, addressed envelope to the Surveyor, Mr. W. N. Wood, Ticehurst, Sussex.

APRIL 4.—**Bognor.**—WATER CARTS.—Bognor U.D.C. invite tenders for the supply of a water van, fitted with Warwick sprinklers, to hold 400 gallons. For further information apply to Mr. Oswald A. Bridges, the Council's Surveyor, Bognor. Tenders to be delivered to Mr. Henry Layton Staffurth, Clerk to the Council, Council Offices, Bognor.

APRIL 4.—**Sunderland.**—WORKS AND MATERIALS.—Sunderland Corporation invite tenders for the works and materials in the borough for one year from May 1 next. The specifications, drawings, etc., may be seen, and forms of tender obtained, on application to the Borough Engineer, Town Hall, Fawcett-street.

APRIL 5.—**Stafford.**—ROAD MATERIALS, ETC.—Staffordshire C.C. invite tenders for the supply and cartage of road materials, tools, and road implements for six districts. Specifications, etc., can be obtained on application to Mr. James Moncur, Chief Surveyor of Main Roads, County Buildings, Stafford.

APRIL 8.—**Glasgow.**—STORES.—Glasgow Corporation invite tenders for the supply of tramway stores. Samples, where specified, may be seen at the Purchasing Department, 46, Bath-street, Glasgow. Specification, etc., can be obtained on application to Mr. James Dalrymple, General Manager, 46, Bath-street, Glasgow.

APRIL 8.—**Hemsworth.**—STONE.—The R.D.C. of Hemsworth invite tenders for the supply of broken and unbroken whinstone, limestone, granite, and dross. Particulars and forms may be obtained on application to Mr. T. H. Richardson, Surveyor, Hemsworth, near Wakefield.

APRIL 9.—**Maldon.**—ROAD MATERIAL.—Maldon R.D.C. invite tenders for the supply and delivery of granite, slag, Kentish flints, picked stone gravel, and carting. Forms of tender, etc., to be obtained of Mr. Edgar J. Ennals, Surveyor, 6, Market-hill, Maldon, Essex.

APRIL 9.—**Southampton.**—STORES.—Southampton Corporation invite tenders for the supply of stores, etc., required for the Borough Engineer's Department. Specification, etc., may be obtained upon application to Mr. J. A. Crowther, Borough Engineer. Tenders must be delivered at the Town Clerk's Office.

★ APRIL 10.—**Kingston.**—STONES.—The Kingston-upon-Thames Corporation invite tenders for supply of certain stones (for particulars see advertisement in this issue). Tenders, on forms obtainable of the Surveyor, Municipal Offices (where samples must be left), to be sent to the Town Clerk, Kingston-upon-Thames, suitably endorsed, on or before April 10.

APRIL 11.—**London.**—ROPE.—Tenders are required by the Egyptian War Department for the supply of 50cwt. hemp rope. Tender forms, etc., may be obtained from Lieut.-Colonel J. H. Western, Queen Anne's-chambers, Westminster.

APRIL 15.—**Wallasey.**—STORES.—Wallasey U.D.C. invite tenders for the supply of stores required for use at the Electricity Supply Works, Seaview-road, Liscard, Cheshire, viz.:—Cotton waste, coal shovels, bolts and nuts, switches and cutouts, etc., oils, etc., meters, gable and junction boxes, fire bars, incandescent lamps, arc lamp carbons, globe strains. Further particulars, etc., may be had on application to the Engineer, Mr. J. A. Crowther, at his office at the said works.

APRIL 19.—**Leeds.**—GRAVEL.—Leeds Corporation Waterworks Committee invite tenders for the supply of 11,360 tons of gravel, in four sizes, for filters. Specifications, etc., may be obtained, and samples of gravel seen, at the office of Mr. Chas. G. Henzell, M.Inst.C.E., Waterworks Engineer, Leeds.

NO DATE.—**Dunmow.**—LIGHTING.—Great Dunmow P.C. Lighting Committee invite tenders for lighting that part of the parish known as the lighting area. Particulars can be obtained from the Clerk, Mr. Lionel C. Mackenzie, Dunmow.

NO DATE.—**Thingoe.**—GRANITE.—Thingoe R.D.C. invite tenders for the supply of granite and slag. Particulars, etc., may be obtained on application to Mr. A. R. Cameron, Surveyor's Office, Mill-lane, Bury St. Edmunds.

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*BUILDING LAND, ANERLEY—At the Thicket Hotel, Anerley-road	Money & Johnston	March 25
*RESIDENCE, ETC., TURNHAM GREEN—At 51, Elliott-road, Turnham Green	Woods	March 30
*FREEHOLD BUILDING LAND, FULHAM—At the Mart	Weatherall & Green	April 9
*FREEHOLD PROPERTY, EAST SHEEN—At the Mart	Farebrother, Ellis, Egerton, Breach, Galsworthy, & Co.	April 11
*THE LONDON COLISEUM, ST. MARTIN'S-LANE, W.C.—At the Mart	Farebrother, Ellis, Egerton, Breach, Galsworthy, & Co.	April 25
*FREEHOLD BUILDING SITE, WESTMINSTER—At the Mart	Trollope	May 1

PATENTS.—*Continued from page* 376.

formed of a pair of upwardly converging frame members bent forwardly and parallel horizontally at their upper part to form the boom, and bent at their lower extremities and presenting forwardly diverging foot extensions, the yoke being rigidly attached to the said foot extensions and presenting a bow at the rear thereof, and constituting therewith a base and braces connecting said bow with said frame members adjacent to said foot extensions.

24,076 of 1906.—J. MOUNIER: *Metal Posts or Columns.*

This relates to a metal column or post, consisting of metal tubes, one sliding within the other, and consists in the combination of a sliding tube, cast iron shot or the like upon which the sliding tube rests, and means for allowing a portion of the shot to escape.

3,651 of 1906.—W. C. FAIRWEATHER (THE ELECTRO-MECHANICAL WORKS CO., LTD.): *Apparatus for Raising and Lowering Loads.*

This relates to a system of apparatus for raising loads by means of compressed air, and is characterised by the fact that compressed air acts directly on the pistons moving in a tubular shaft and bearing tightly on the walls of the shaft, which pistons forming one general part of the loads are raised and taken out together with these latter from the apparatus, their number being similar to the number of the loads being raised, thus ensuring the continuous work of the elevator, there being no necessity to await the return of the piston between consecutive assents.

4,394 of 1906.—J. F. COWPER: *Pipes or Tubes.*

This relates to an earthenware or stoneware pipe having a cable or wire wound round the outside of the pipe, longitudinal bars placed under or over the binding wire, and a covering of concrete in which the wire and bars are enclosed.

9,602 of 1906.—P. R. J. WILLIS (F. W. ZIEGLER): *Fire Escapes.*

This relates to a fire escape comprising a casing, a reel mounted upon a shaft journalled in the casing, gearing and speed controlling mechanism, a tooth wheel mounted upon the shaft carrying the reel, a tooth wheel gearing into the wheel aforesaid, and mounted upon a second shaft journalled in the casing and carrying a worm, a worm wheel in mesh with the worm in the casing and carrying speed controlling means such as a clutch, a lever for operating the controlling means, and a depending hinged projection provided with means for attachment to the person.

6,168 of 1906.—F. PARSLER: *Appliance for Stretching and Holding in Position Wall Papers and the like.*

This relates to an appliance for stretching and holding in position wall papers and the like. To carry out this object there is used a flat strip of wood or other suitable material and of such dimensions as may be needed, having regard to the papers or the like that are to be used therewith, and this strip may be secured crosswise on the end of a handle of the required length. On the upper edge of the strip are fitted two or more clips or catches or other devices, preferably it may be near the ends of the arms of the crosswise arranged strip, which clips or the like are so formed as to hold the paper or the like, tightly stretching the same horizontally. These clips or other devices may also be in connexion with and be governed by sliding rods mounted along the arms of the strip in suchwise that these rods can cause the clips or the like more firmly to grasp the paper or the like and perhaps the more tightly to stretch the same, and these rods can be governed and actuated by any usual handles mounted on the strip in any ordinary manner either in addition to or instead of the aforesaid handle, the movement of these handles causing in any usual manner the rods to slide and operate the clips or the like.

10,978 of 1906.—J. J. R. ADAMS: *Fire-places—to adapt them for Heating Rooms, Halls, Warehouses, and the like by hot water.*

This relates to a heating arrangement comprising an open fire-grate and a boiler located so as to form the back or sides of the fire-grate, and is characterised by their being formed at the back or sides of the boiler a chamber, which is closed excepting only at its lower part, where connexion is made by means of passages respectively with the fire-grate and with an uptake flue or flues arranged respectively at the sides or back of the boiler and leading to the chimney, so that when in operation the boiler is subjected on its front back, and sides to the heating effect of flames and hot gases from the fire, and said chamber is kept charged with flames and hot gases from the hottest part of the fire in a slowly moving or circulating condition.

11,378 of 1906.—J. O. SPONG: *Appliance for Securing Flexible Hose Piping to Plugs, Taps, Sprinklers, Connexions, and the like.*

This relates to an appliance for securing flexible hose piping to plugs, taps, sprinklers, connexions, or the like, consisting of a loop or ring of leather strip, chain, string, or the like, connected to a U or equivalent-shaped device or a socket arranged thereon so that on the twisting of the loop or ring of leather around a flexible hose pipe and its connexion to the desired degree, the side members of the U or equivalent-shaped device can be folded or passed down on the sides of the hose piping to embrace same, and so hold the appliance in position.

12,078 of 1906.—E. W. LANCASTER: *Supply and Discharge Fittings for Folding or Tip-up Baths, Lavatory Basins, and the like.*

This relates to supply and discharge fittings for folding baths, lavatory basins, and the like, comprising an inlet and an outlet chamber formed in the lowest point of the bath or basin, having hollow trunnions on each side thereof, forming pivots for the bath or basin, swivel glands to connect said trunnions to the supply and waste pipes, and brackets to support said trunnions.

13,907 of 1906.—E. H. MORGAN.—*Appliance for Use in Stoking Underfed Domestic Fire-grates, Furnaces, and the like.*

This relates to an appliance for use in stoking underfed domestic fire-grates, furnaces, and the like, comprising a perforated blade mounted at one extremity of a handle and having a counterweight or other device at the other end of the handle for maintaining that end depressed when desired, and a support pivoted upon the handle intermediate of its length to afford a fulcrum therefor.

16,203 of 1906.—J. DOWELL: *Securing or Connecting Knobs to Doors and other Articles.*

This relates to means for enabling knobs to be attached to doors and the like, and consists in using with a hollow knob provided with holes to receive a spindle of square or other suitable cross-section a spindle of a built-up character, and consisting of a central spindle having a rectangular cross-section and with or without a squared portion at one end to receive one knob, and a substantially U-shaped portion adapted to fit thereon and provided near to one end with projections and at the other end with outwardly extending arms for a bush secured to the door and with or without a slotted plate connected to one of the knobs.

21,242 of 1906.—M. G. EWER: *Pipe Wrenches.*

This relates to a pipe wrench, and consists in the combination with a fixed jaw and a tang therefor of a sliding jaw provided with an embracing band at one end thereof adapted to engage against the back of the tang and with a pivoted knuckle having a curved bearing surface engaging the tang opposite thereto, and an adjusting screw swivelled on said pivoted knuckle, the embracing band at the gripping of said jaw loosely surrounding the tang, whereby there is freedom of rocking movement of the jaw with respect to the tang.

26,979 of 1906.—A. T. ABBEY: *Mortice Lock.*

This relates to a lock, and consists in the combination of a cylindrical casing, a bolt adapted to slide endwise in and to be guided at its ends by the casing, and having a longitudinal through slot with a roller at its inner end and an upper inclined gateway, a saddle fitted and frictionally held to the bolt and serving to close the gateway and adapted to be operated by a permanent lug on its inner side and a removable key on its outer side, and upper and lower guided spindles respectively connected to outer and inner door handles and slidable transversely to and through the bolt slot and casing sides, and having corresponding projecting inclines respectively adapted to engage with the bolt slot roller, so that when the outer handle is pushed in or the inner handle is pulled the incline on the respective spindle will cause the bolt to be withdrawn, the upper spindle having a stud which, when it can pass through said gateway, permits of such operation of the bolt by the outer handle, but which when the gateway is closed by the saddle prevents such operation of the bolt.

5,881 of 1906.—P. B. JAGGER: *A Process of and Means for Manufacturing Concrete Slabs, Beams, Pipes, and other Concrete Articles.*

This relates to a process for manufacturing concrete articles by placing the plastic concrete in suitable receptacles on a platform which is subjected both to a horizontal vibratory motion and to a suddenly arrested rocking motion.

6,034 of 1906.—A. W. NEAL: *A Distemper or Composition adapted for the Production of a Stone-like Surface.*

This relates to a composition for producing stone-like surfaces, consisting of the following ingredients, viz., chalk, size, oil, spirit, alum or silica, sand and mica, with or without stainers.

9,631 of 1906.—J. RILEY: *Apparatus for the Manufacture of Bricks and Concrete Blocks.*

This relates to machines for moulding blocks mounted on a revolving table and having one or more of their sides adapted to be moved for the removal of the moulded articles, and consists in the employment of retractable cores adapted to rotate with said table during the moulding, and means for retracting said cores before the moulds are opened.

20,311 of 1906.—E. UFENAST: *Hollow Beam constructed of Burnt Clay with Iron Insertions and Ceilings built therewith.*

This relates to a hollow beam built up of one or more hollow bricks of burnt clay which have longitudinal perforations both in the top part and in the bottom part, for the reception of iron insertions of suitable cross-section turned up at their ends and extending through the hollow length of the beam, the said perforations being filled with cement or mortar after the iron insertions have been introduced and the abutting joints between the bricks have also been filled with cement mortar.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

March 8.—By DYER, SON, & HILTON (at Lee).	
Lee.—64, Handen-rd., u.t. 74 yrs., g.r. 7*l.*, y.r. 45*l.*	£350
March 11.—By A. EDMONDS.	
Seaford, Sussex.—Belgrave-rd., "Rougemont" and 2 acres, f., y.r. 250*l.*	3,250
By KEMSLEYS'.	
Leytonstone.—23 and 25, Drayton-rd., f., w.r. 44*l.* 8s.	330
March 12.—By BRADSHAW, BROWN, & CO.	
Woolwich.—Harrington-rd., "Longs Wharf," area 1 a. 0 r. 8 p., f., y.r. 350*l.*	7,600
Buckhurst Hill.—2, Hawthorn-villas, f., e.r. 40*l*	560
By DRIVERS'.	
Holloway.—6 and 7, Carville-st., f., w.r. 72*l.* 16s.	560
Bow.—Sutherland-rd., f.g. rents 25*l.* 4s., reversion in 49¼ yrs.	600
Marylebone.—196, Marylebone-rd., u.t. 13 yrs., g.r. 30*l.*, w.r. 105*l.* 6s.	175
By PARKHOUSE & PEARSON.	
Marylebone.—51, Lisson-st. (s.), f., w.r. 59*l.* 16s.	405
By ROGERS, CHAPMAN, & THOMAS.	
Pimlico.—Alderney-st., f.g. rents 19*l.*, reversion in 26 yrs.	2,470
Sussex-st., f.g.r. 16s., reversion in 26 yrs.	170
Warwick-st., f.g. rents 1*l.* 10s., reversion in 26 yrs.	300
Winchester-st., f.g. rents 6*l.* 10s., reversion in 26 yrs.	1,250
By RUTLEY, SON, & VINE.	
Tottenham Court-road.—2, 3, and 24, Pitt-st., f., y.r. 171*l.*	2,330
66, Charlotte-st., f. y.r. 100*l.*	1,630
20, Tottenham-st., f., y.r. 60*l.*	810
Hampstead-road.—33, Robert-st., u.t. 14½ yrs., g.r. 13*l.*, p.	235
By MADY & FLINT.	
Kentish Town.—77, Mansfield-rd., u.t. 61 yrs., g.r. 8*l.*, y.r. 48*l.*	420
March 13.—By CARTWRIGHT & ETCHES.	
Chelsea.—30, Seaton-st., u.t. 419 yrs. g.r nil, e.r. 45*l.*	390
Pimlico.—37, Winchester-st., u.t. 23 yrs., g.r. 9*l.*, e.r. 65*l.*	345
By HAROLD GRIFFIN.	
Battersea.—20 to 32 (even), Culvert-rd., u.t. 54 yrs., g.r. 34*l.* 14s., y.r. 178*l.*	890
Hornsey.—2 and 4, Campsbourne-rd., f., y.r. 64*l.*	610
Chelsea.—6, Danvers-st., u.t. 42 yrs., g.r. 5*l.*, y.r. 36*l.*	305
By HOBSON, RICHARDS, & CO.	
Brixton.—7, 23, and 33, Plato-rd., u.t. 60½ yrs., g.r. 19*l.* 10s., y.r. 108*l.*	990
By RUSHWORTH & BROWN.	
Wandsworth.—158 to 164, (even), Merton-rd., u.t. 43 yrs., g.r. 10*l.*, w.r. 120*l.*	675
Fulham.—38 and 40, Haldane-rd., u.t. 50 yrs., g.r. 6*l.* 5s., y.r. 62*l.* 8s.	410
By DOUGLAS YOUNG & CO.	
Hackney.—489 and 491, Hackney rd., (s.), u.t. 38¾ yrs., g.r. 6*l.*, y.r. 9*l*	100
Notting Hill.—84, Silchester-rd., u.t. 56 yrs., g.r. 10*l.* 10s., y.r. 45*l.*	250
March 14.—By ARBER, RUTTER, WAGHORN, & BROWN.	
Belgravia.—36, Lowndes-st., u.t. 21¾ yrs., g.r. 25*l.*, y.r. 420*l.*	4,425
Hyde Park.—84, Westbourne-ter., u t. 30½ yrs., g.r. 54*l.* 19s., v.r. 211*l.*	1,610
Mayfair.—19, Brick-st., f., e.r. 180*l*	1,620
By BALCH & BALCH.	
Highgate.—27, Darthmouth Park-av., u.t. 60 yrs., g.r. 8*l.*, v.r. 60*l.*	555
Kentish Town.—56, Burghley-rd., u.t. 63 yrs., g.r. 6*l.*, y.r. 48*l.*	545
17, Woodsome-rd., u t. 55 yrs., g.r. 7*l.*, e.r. 45*l.* p.	460
By BISLEY & SONS.	
Peckham.—29 to 41 (odd), Kirkwood-rd., u.t. 62 yrs., g.r. 20*l.* 1s., w.r. 212*l.*	1,585
Camberwell.—3, Tindal-st., f., v r. 28*l.*	295
Rotherhithe.—20, 24, and 26, Plough-rd., u.t. 41 yrs., g.r. 12*l.*, y.r. 102*l.*	1,055
By CHESTERTON & SONS.	
Kensington.—Queen's Gate, f.g r. 120*l.*, reversion in 49¼ yrs	3,550
Queen's Gate-ter., f.g r. 80*l.*, reversion in 49¼ yrs.	2,405
Notting Hill.—16, 18, and 20, Princes-st., (s.), f., y.r. 130*l.*	1,930
Kensington.—13, St. Albans-rd., u t. 26 yrs., g.r. 3*l.*, y.r. 80*l.*	1,030
By NEWBON, SHEPHARD, & EDWARDS.	
Clapham.—Larkhall-la., and Courland-gr., f.g.r. 62*l.* 10s., reversion in 7 yrs	4,215
PERKINS & CESSAR	
Bermondsey.—24, Jamaica-rd., u.t. 21 yrs., g.r. 14*l.*	150
By SOUTHON & ROBINSON.	
Deptford.—Stanhope-st., f.g.r. 14*l.*, reversion in 12½ yrs.	630

Hammersmith.—Beryl-rd., f.g.r. 18*l.*, reversion in 82¾ yrs. £400

By STIMSON & SONS.

Chiswick.—82, Fielding-rd., f. 325
Camberwell.—81 and 83, Picton-st., f., w.r. 41*l.* 12s. 500
Pimlico.—189, Vauxhall Bridge-rd., and 19, Tachbrook-st., u.t. 17¼ yrs. g.r. 40*l.*, y.r. 92*l.* 370
Walworth Road.—94, Carter-st., u.t. 38¼ yrs., g.r. 5*l.*, e.r. 42*l.* 270
Camberwell.—18, Mansion-st., u.t. 57¼ yrs., g.r. 6*l.* 120
Dulwich.—Landells-rd. and Landcroft-rd., f.g.r. 52*l.* 10s. 1,150
Walworth.—30, Lorrimore-rd., u.t. 37¼ yrs., g.r. 5*l.*, y.r. 30*l.* 255
Hoxton.—68 and 70, Wenlock-st., u.t. 35 yrs., g.r. 12*l.*, y.r. 76*l.* 460
122 and 124, Wenlock-st., u.t. 35 yrs., g.r. 8*l.* 8s., y.r. 76*l.* 510
34, Eagle Wharf-rd., u.t. 24 yrs., g.r. 8*l.* 400
1, Hale-st., u.t. 20 yrs., g.r. 10*l.* 10s. 250
Islington.—Ashby-rd., l.g.r. 20*l.*, u.t. 28¼ yrs., g.r. nil 275
Canonbury.—39, St. Paul's-rd., u.t. 39 yrs., g.r. 3*l.* 6s. 6d., y.r. 60*l.* 510
Stoke Newington.—41, Lordship-rd., u.t. 55¼ yrs., g.r. 6*l.*, y.r. 40*l.* 400

By FRANK SWAIN.

Stoke Newington.—72 to 80 (even), Rouverie-rd., u.t. 64¼ yrs., g.r. 33*l.*, y.r. 154*l.* 1,405

By WYER, ADAMS, & GLOVER.

Norwood.—Portland-rd., l.g.r. 12*l.*, y.r. 80*l.*, reversion in 19 yrs. 1,140

March 15.—DUNN, SOMAN, & COVERDALE.

Blackheath.—11, 7, & 6, Elliot-pk., u.t. 47 yrs., g.r. 42*l.*, y.r. 200*l.* 880

By GILLOWS'.

Torrington Mews West, W.C.—No. 19, u.t. 16 yrs., g.r. 8*l.*, y.r 24*l.* 150

By MULLETT, BOOKER, & CO.

Hyde Park.—26, Inverness-ter., u.t. 47¼ yrs., g.r. 27*l.* 10s., p. 1,150

By CHARLES VARLEY.

Stoke Newington.—51, Prince George-rd., u.t. 86 yrs., g.r. 6*l.* 10s., e.r. 38*l.* 275
Dalston.—261, Queen's-rd. (p.h.), u.t. 16 yrs., g.r. 60*l.*, y.r. 160*l.* 190

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold, p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. beerhouse; p.h. for public-house; o. for office; s. for shops; ct. for court.

MEETINGS.

FRIDAY, MARCH 22.

Architectural Association.—Mr. E. T. Hall on "Sanatoria." 7.30 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. F. J. Kean, B.Sc., on "A Point in Turbo-Alternator Design." 8 p.m.

Glasgow Architectural Craftsmen's Society.—Annual Business Meeting. 8 p.m.

SATURDAY, MARCH 23.

Edinburgh Architectural Association.—Visit to Holyrood Palace and Chapel.

Aberdeen Architectural Association.—Annual Business Meeting and "At Home."

Royal Institution.—Professor J. J. Thomson on "Röntgen, Cathode, and Positive Rays."—VI. 3 p.m.

Royal Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Willesden Infirmary. 3 p.m.

Architectural Association.—Sixth Spring Visit, to Messrs. Debenham & Freebody's premises, Wigmore-street. 3 p.m.

Junior Institution of Engineers.—Visit to Fortis Green Reservoir Works of the Metropolitan Water Board. 3 p.m.

MONDAY, MARCH 25.

Royal Sanitary Institute (Lectures on Hygiene in its Bearing on School Life).—Mr. W. C. Tyndale on "Sanitary Appliances." 7 p.m.

University of London (Imperial Institute-road).—Mr. Banister Fletcher on "Byzantine Architecture: St. Mark's, Venice, etc." 8 p.m.

TUESDAY, MARCH 26.

Institute of Sanitary Engineers.—Students' Lecture. 7 p.m. "Sanitary Law." by Mr. J. Priestley, M.D.

Institution of Civil Engineers.—(1) Mr. Moses Kellow on "The Application of Hydro-Electric Power to Slate Mining"; (2) Mr. A. H. Preece on "Electrically Driven Winding Gear and the Supply of Power to Mines." 8 p.m.

WEDNESDAY, MARCH 27.

Edinburgh Architectural Association.—Dr. Gilbert J. Fowler on "Some Principles Underlying the Design of Small Sewage Installations." 8 p.m.

Institute of Sanitary Engineers.—Examination Committee. 5.30 p.m. Election Committee. 6.30 p.m. Sessional Meeting. 8 p.m. "A Short History of Building Materials," by Messrs. P. M. Fraser, A.R.I.B.A., and A. A. H. Scott.

Institution of Civil Engineers.—Students' Visit to the Paper Mills of Messrs. William Joynson & Son, St. Mary Cray, Kent.

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PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 8 0	per 1000 alongside, in river.
Rough Stocks and Grizzles	1 6 0	" " "
Picked Stocks for Facings	2 10 0	" delivered.
Flettons	1 8 0	" at railway depôt.
Red Wire Cuts	1 14 0	" " "
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire	3 15 0	" " "
Do. Bullnose	4 0 0	" " "
Best Stourbridge Fire Bricks	3 14 0	" " "

GLAZED BRICKS.

Best White and Ivory Glazed Stretchers	12 0 0	" " "
Headers	11 0 0	" " "
Quoins, Bullnose, and Flats	16 0 0	" " "
Double Stretchers	19 0 0	" " "
Double Headers	16 0 0	" " "
One Side and two Ends	19 0 0	" " "
Two Sides and one End	20 0 0	" " "
Splays, Chamferred, Squints	20 0 0	" " "
Best Dipped Salt Glazed Stretchers, and Header	12 0 0	" " "
Quoins, Bullnose, and Flats	14 0 0	" " "
Double Stretchers	15 0 0	" " "
Double Headers	14 0 0	" " "
One Side and two Ends	15 0 0	" " "
Two Sides and one End	15 0 0	" " "
Splays, Chamferred, Squints	14 0 0	" " "
Second Quality White and Dipped Salt Glazed	2 0 0	" less than best.

	s. d.	
Thames and Pit Sand	7 0	per yard, delivered.
Thames Ballast	5 6	" "
Best Portland Cement	28 0	per ton, "
Best Ground Blue Lias Lime	19 0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½ per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½ " "
PORTLAND STONE (20 ft. average)—Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	1 " "
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	2½ " "

	s. d.	
Ancaster in blocks	1 10	per ft. cube, deld. rly. depôt.
Beer "	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks	2 4	" "
Red Corsehill "	2 2	" "
Closeburn Red Freestone	2 0	" "
Red Mansfield "	2 4	" "

YORK STONE—*Robin Hood Quality.*

Scappled random blocks	2 10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3 per ft. super., "
6 in. rubbed two sides ditto, ditto	2 6	" "
3 in. sawn two sides slabs (random sizes)	0	11½ " "
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½ " "
1½ in. to 2 in. ditto, ditto	0 6	" "

HARD YORK—

Scappled random blocks	3	0 per ft. cube, "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	8 per ft. super., "
6 in. rubbed two sides ditto	3 0	" "
3 in. sawn two sides slabs (random sizes)	1 2	" "
2 in. self-faced random flags	0 5	" "

SLATES.

In. In.	£ s. d.	
20×10 best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20×12 " "	13 17 6	" "
20×10 first quality "	13 0 0	" "
20×12 " "	13 15 0	" "
16×8 " "	7 5 0	" "
20×10 best blue Portmadoc	12 12 6	" "
16×8 " "	6 12 6	" "
20×10 best Eureka unfading green	15 17 6	" "
20×12 " "	18 7 6	" "
18×10 " "	13 5 0	" "
16×8 " "	10 5 0	" "

SLATES (*continued*).

In. In.	£ s. d.	
20×10 permanent green	11 12 6	per 1000 of 1200 at r. d.
18×10 " "	9 12 6	" "
16×8 " "	6 12 6	" "

TILES.

	s. d.	
Best plain red roofing tiles	42	0 per 1000 at rly. depôt.
Hip and Valley tiles	3	7 per doz. "
Best Broseley tiles	50	0 per 1000 "
Do. Ornamental tiles	52	6 " "
Hip and Valley tiles	4	0 per doz. "
Best Ruabon red, brown, or brindled do. (Edwards)	57	6 " "
Do. Ornamental do.	60	0 " "
Hip tiles	4	0 per doz. "
Valley tiles	3	0 " "
Best Red or Mottled Staffordshire do. (Peakes)	51	9 per 1000 "
Do. Ornamental do.	54	6 " "
Hip tiles	4	1 per doz. "
Valley tiles	3	8 " "
Best "Rosemary" brand plain tiles	48	0 per 1000 "
Best Ornamental tiles	50	0 " "
Hip tiles	4	0 per doz. "
Valley tiles	3	8 " "
Best "Hartshill" brand plain tiles, sand-faced	50	0 per 1000 "
Do. pressed	47	6 " "
Do. Ornamental do.	50	0 " "
Hip tiles	4	0 per doz. "
Valley tiles	3	6 " "

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13 10 0	... 15 0 0
Deals: best 3 by 9	13 0 0	... 14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	... 12 0 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less thn best.
Battens: seconds	0 10 0	" "
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	... 10 0 0
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	... 9 10 0
Foreign Sawn Boards—1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"

	At per load of 50 ft.	
Fir timber: best middling Danzig or Memel (average specification)	4 10 0	... 5 0 0
Seconds	4 0 0	... 4 10 0
Small timber (8 in. to 10 in.)	3 12 6	... 3 15 0
Small timber (6 in. to 8 in.)	3 0 0	... 3 10 0
Swedish balks	2 10 0	... 3 0 0
Pitch-pine timber (30 ft. average)	4 0 0	... 4 15 0

JOINERS' WOOD.	At per standard.	
White Sea: first yellow deals, 3 in. by 11 in.	24 0 0	... 25 0 0
3 in. by 9 in.	22 0 0	... 23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	... 18 0 0
Second yellow deals, 3 in. by 1 in.	18 10 0	... 20 0 0
" " 3 in. by 9 in.	17 10 0	... 19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	... 14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	... 15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	... 12 0 0
Petersburg first yellow deals, 3 in. by 11 in.	21 0 0	... 22 10 0
Do. 3 in. by 9 in.	18 0 0	... 19 10 0
Battens	13 10 0	... 15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	... 17 0 0
Do. 3 in. by 9 in.	14 10 0	... 16 0 0
Battens	11 0 0	... 12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	... 14 0 0
Do. 3 in. by 9 in.	12 10 0	... 14 0 0
Battens	10 0 0	... 11 0 0
White Sea and Petersburg—First white deals, 3 in. by 11 in.	14 10 0	... 15 10 0
" " 3 in. by 9 in.	13 10 0	... 14 10 0
Battens	11 0 0	... 12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	... 14 10 0
" " 3 in. by 9 in.	12 10 0	... 13 10 0
" " battens	10 0 0	... 11 0 0
Pitch-pine: deals	18 0 0	... 21 0 0
Under 2 in. thick extra	0 10 0	... 1 0 0
Yellow Pine—First, regular sizes	44 0 0	upwards.
Oddments	32 0 0	"
Seconds, regular sizes	33 0 0	"
Yellow Pine oddments	28 0 0	"
Kauri Pine—Planks, per ft. cube	0 3 6	... 0 5 0
Danzig and Stettin Oak Logs—Large, per ft. cube	0 3 0	... 0 3 6
Small " "	0 2 6	... 0 2 9
Wainscot Oak Logs, per ft. cube	0 5 6	... 0 6 0
Dry Wainscot Oak, per ft. sup. as inch	0 0 8½	... 0 0 9½
¾ in. do. do	0 0 7	... —
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	... 0 1 0
Selected, Figury, per ft. super. as inch	0 1 6	... 0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10	... 0 1 0
Teak, per load	17 0 0	... 22 0 0
American Whitewood Planks, per ft. cube	0 4 0	... 0 5 0

Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	... 0 17 6
1 in. by 7 in. yellow, planed and matched	0 14 0	... 0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	... 1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	... 0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	... 0 15 0
1¼ in. by 7 in. white, planed and matched	0 15	... 0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	... 0 13 6
1 in. by 7 in. " "	0 14 0	... 0 18 0
¾ in. by 7 in. white "	0 10 0	... 0 11 6
1 in. by 7 in. " "	0 12 9	... 0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.		£ s. d.
Rolled Steel Joists, ordinary sections	7 7 6	...	7 15 0
Compound Girders, ordinary sections	9 10 0	...	10 10 0
Steel Compound Stanchions	12 5 0	...	13 5 0
Angles, Tees, and Channels, ordinary sections	9 5 0	...	10 5 0
Flitch Plates	9 5 0	...	10 5 0
Cast Iron Columns and Stanchions including ordinary patterns	8 0 0	...	9 0 0

METALS.

	Per ton, in London. £ s. d.		£ s. d.
IRON—			
Common Bars	8 10 0	...	9 0 0
Staffordshire Crown Bars, good merchant quality	9 5 0	...	9 15 0
Staffordshire "Marked Bars"	11 0 0	...	—
Mild Steel Bars	9 10 0	...	9 15 0
Hoop Iron, basis price	9 15 0	...	10 0 0
" " Galvanised	17 10 0	...	—
("And upwards, according to size and gauge.)			
Sheet Iron Black—			
Ordinary sizes to 20 g.	10 0 0	...	—
" " 24 g.	11 0 0	...	—
" " 26 g.	12 10 0	...	—
Sheet Iron, Galvanised, flat, ordinary quality—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	16 0 0	...	—
Ordinary sizes to 22 g. and 24 g.	16 10 0	...	—
" " 26 g.	17 0 0	...	—
Sheet Iron, Galvanised, flat, best quality—			
Ordinary sizes to 20 g.	19 0 0	...	—
" " 22 g. and 24 g.	19 10 0	...	—
" " 26 g.	21 0 0	...	—
Galvanised Corrugated Sheets—			
Ordinary sizes 6 ft. to 8 ft. 20 g.	16 0 0	...	—
" " 22 g. and 24 g.	16 5 0	...	—
" " 26 g.	17 10 0	...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	13 0 0	...	—
Best Soft Steel Sheets, 22 g. & 24 g.	14 0 0	...	—
" " " 26 g.	16 0 0	...	—
Cut Nails, 3 in. to 6 in. (Under 3 in., usual trade extras.)	10 15 0	...	11 5 0

LEAD, &c.

	Per ton, in London. £ s. d.		£ s. d.
LEAD—Sheet, English, 3lb. and up.	22 15 0	...	—
Pipe in coils	23 5 0	...	—
Soil pipe	25 5 0	...	—
Compo pipe	26 5 0	...	—
ZINC—Sheet—			
Vieille Montagne ...ton	34 5 0	...	—
Silesian	34 0 0	...	—
COPPER—			
Strong Sheet ...per lb.	0 1 4	...	—
Thin " "	0 1 5	...	—
Copper nails "	0 1 3	...	—
BRASS—			
Strong Sheet "	0 1 2	...	—
Thin " "	0 1 3	...	—
TIN—English Ingots "	0 1 11	...	—
SOLDER—Plumbers' "	0 0 9	...	—
Tinmen's "	0 0 11½	...	—
Blowpipe "	0 1 1	...	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

15 oz. thirds	2½d. per ft. delivered.
" fourths	1¾d. " "
21 oz. thirds	3½d. " "
" fourths	2½d. " "
26 oz. thirds	4½d. " "
" fourths	3½d. " "
32 oz. thirds	5d. " "
" fourths	4½d. " "
Fluted Sheet, 15 oz.	3¾d. " "
" 21 oz.	4¾d. " "

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

¼ Hartley's	2½d. per ft. delivered.
¼ "	2¾d. " "
⅜ "	3d. " "
Figured and Oxford Rolled "Oceanic" Glass, white ...	4d.
Do. " tinted ...	5½d. " "

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 1 11
" " " in barrels	"	0 2 0
" " in drums	"	0 2 2
Boiled " " in pipes	"	0 2 1
" " " in barrels	"	0 2 2
" " " in drums	"	0 2 4
Turpentine in barrels	"	0 4 4
" in drums	"	0 4 7
Genuine Ground English White Lead	per ton	26 0 0
Red Lead, Dry	"	24 10 0
Best Linseed Oil Putty	per cwt.	0 7 0
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TO CORRESPONDENTS

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All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

*** Next week communications for insertion under this heading must reach us *not later than* 10 *a.m. on Wednesday*, as, owing to the Easter holidays, we go to press a day earlier than usual.

* Denotes *accepted*. † Denotes *provisionally accepted*.

ABERCARN.—For 2¾ miles of subsidiary sewers for the Urban District Council. Mr. J. Williams, Engineer and Surveyor, Council Offices, Abercarn:—

A. E. Nunn	£2,974 6 4	Rees Jones & Co.	£1,904 14 9
H. C. Parfitt	2,848 0 0	Barnes Chaplin & Co.	1,881 5 8
C. Sayers	2,450 0 0	R. Macnab Newport*	1,280 0 0
Jones	2,432 6 7		
Dyson Parfitt & Co.	2,329 2 6		
A. Rossiter	1,962 3 0		

AMMANFORD.—For new council school. Mr. W. D. Jenkins, F.S.I., County Education Architect, Carmarthen. Quantities by Mr. T. Bridgewater Jones, Corporation-street, Birmingham:—

Thomas & John Brown	£12,180 0 0
Thomas & Jones	11,090 0 0
E. Thomas & Sons	11,000 0 0
G. Davies	10,750 10 10
D. Jenkins	10,750 0 0
D. Meredith	10,613 0 0
L. Davies	10,287 0 0
Davies & Griffiths	10,177 0 0
G. Mercer	10,000 0 0
A. & A. Thomas	9,998 9 5
D. Rees	9,987 0 0
B. Howell & Son, Ltd.	9,980 0 0
P. Gaylard	9,850 0 0
W. Morgan	9,499 0 0
D. B. John & Boy	9,445 10 0
E. G. Groom	8,904 0 0
R. Davies	8,900 0 0
D. Davies & Sons	8,500 0 0
W. Evans	8,339 0 0
D. Davies	8,250 0 0
D. W. Davies	8,192 0 0
D. Howells & Son	7,699 0 0
Jones Bros., Tirydail, Ammanford*	7,445 6 0

AMWELL.—For construction of coal bays at Amwell for the Metropolitan Water Board:—

T. Docwra & Son	£996 15 5
W. Shurmur & Sons, Ltd.	989 0 0
Wilkinson & Co.	979 6 3
J. A. Ewart	824 1 11
W. Muirhead & Co., Queen Victoria-street*	799 19 4

BLYTH.—For pipe laying, etc., for the Urban District Council. Mr. J. Fawcett, Surveyor, Council Offices, Bridge-street, Blyth:—

Foggan & Todd	£750 0 0	W. Lant	£462 1 6
J. Hornsley	601 2 6	M. McKinnon	461 5 0
W. B. Moffitt	575 15 0	J. Robson, Heaton, Newcastle*	307 17 6
W. Carr	493 15 0		
A. Best	482 14 6		
J. Archbold	475 3 4	G. Johnson	314 15 0

CARDIFF.—For erecting joint stores at Trade-street Depots, for the Corporation. Mr. W. Harpur, M.Inst.C.E., City Engineer, City Hall, Cardiff:—

W. E. Blake	£756 17 6	D. Davies & Son	£620 11 4
W. T. Gough	725 0 0	Cox & Bardo	616 3 7
Hatherley & Co.	677 0 0	W. T. Morgan	599 0 0
Blacker Bros.	672 0 0	F. Small	598 0 0
C. C. Dunn	668 8 7	J. Allan	586 11 6
G. Beames	667 10 0	E. R. Evans Bros.	579 15 4
G. Hallett	662 16 0	F. Bond	579 4 3
E. Turner & Sons	626 15 4	Knox & Wells, Cardiff‡	558 6 3
F. C. Williams	622 19 6		
W. Symonds & Co.	622 0 10		

‡ Accepted subject to confirmation of Council.

CARISBROOKE.—For a sewer at Cemetery-hill, for the Isle of Wight Rural District Council. Mr. H. Newland, Surveyor, No. 1, Castle-street, Carisbrooke:—

Barton & Co.	£447 10	J. Ball & Son	£229 0
I. Barton	259 0	G. F. Quinton	227 0
F. Hayter	238 10	H. Scott Newport*	220 0

CHATHAM.—For erecting laundry building and bakery on land adjoining the workhouse, for the Guardians. Mr. E. Farley Cobb, architect, 20, High-street, Rochester:—

Laundry.

C. E. Skinner, Chatham* £2,190

Bakery.

H. E. Phillips, Gillingham* 920

CHISLEDON (Wilts).—For rebuilding the Elm Tree Inn. Messrs. Bishop & Fisher, architects, Regents-circus, Swindon:—

M. Williams	£1,372 7 0	A. E. Tunley	£1,041 10 0
W. J. C. Tarrant	1,169 15 0	A. J. Colborne	1,022 10 0
S. Chambers	1,117 19 0	J. G. Norman	1,015 5 6
J. Edwards & Son	1,056 0 0	H. & C. Spackman	1,003 0 0
R. J. Leighfield	1,053 12 0	Chick, Carden, & Co., Highworth*	994 5 5
Tydeman Bros.	1,049 15 0		

DARTFORD.—For cleaning and painting at Gore Farm (convalescent) Fever Hospital for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-chief:—

S. T. Wright & Co	£727 12 6	E. Proctor & Son	£418 0
J. S. Fenn	527 15 0	J. Ellingham & Sons, Spital-st., Dartford*	384 0
W. Hussey	439 0 0		
L. Kazak	431 15 0		

DEVONPORT.—For erecting sections of St. Thomas's Church, North Keyham. Messrs. Hine, Odgers, & May, architects, 23, Lockyar-street Plymouth:—

Pethick Bros.	£4,444 0 0	F. J. Stanbury	£3,781 0 0
Pearn Bros.	3 998 0 0	G. B. Turpin	3,737 0 0
A. R. Lethbridge & Son	3 985 0 0	Roach & Lovell	3 688 0 0
J. Cockerell	3 958 15 6	J. Paynter	3,580 0 0
A. Andrews	3,920 0 0	Matcham & Co., Ltd., Plymouth*	3,445 0 0
Wakeham Bros.	3,828 0 0		

DOWNPATRICK (Ireland).—For erecting a dwelling-house on Circular-road, for the Misses M'Alister. Mr. F. P. Nolan, C.E., Downpatrick:—

J. A. Gordon & Son	£835 0	R. McDonald, Downpatrick*	£795 0
T. Gilmore	798 10	Flynn & McNeill	747 0

EDINBURGH.—For the erection of the new Municipal Art School in Lauriston. Mr. J. M. Dick Peddie, architect, Albyn-place, Edinburgh:—

Masons: W. Gerard & Son (with Locharbriggs stone)	£14,390 0 0
(Whom failing, W. Turner & Son, £14,450.)	
Joiners: W. & J. R. Watson	9,086 0 0
(Whom failing, J. & F. Forrest, £9,418.)	
Steel and Iron: A. Mather & Son	1,682 14 0
(Whom failing, W. Little & Sons, £1,717 18s.)	
Plumbers: R. Munro & Son	2,730 0 0
(Whom failing, P. Knox & Sons, £2,756.)	
Plaster: W. Baird	2,864 15 9
Whom failing, trustees of P. F. Cavanagh, £3,065.)	
Slate and Asphalte: A. Dobson & Son	1,357 0 0
(Whom failing, A. Ogilvie, £1,372.)	
Glazier: J. Lawson	1,100 0 0
(Whom failing, J. Coutts & Co., £1,138 8s.)	
Total	£33,210 9 9

GREAT YARMOUTH.—For the erection of grand-stands at race course, for the Race Committee of the Town Council. Mr. J. W. Cockrill, A.R.I.B.A., Borough Surveyor, Town Hall, Great Yarmouth:—

Kirk & Randall	£5,180	L. Haddingham	£4,679
J. Youngs & Son	4,916	B. G. Beech	4,679
Moore & Son	4,796	G. W. Beech	4,673
Spencer, Santo, & Co.	4,750	R. N. Barnes	4,650
Pattinson & Son	4,737	A. Gunns	4,567
Carter & Wright	4,720	J. Read	4,523
H. E. Cork	4,699	J. Harman Senr.	4,330

GREAT YARMOUTH.—For pulling down and rebuilding shop, King-street. Messrs. A. R. Calvert & William R. Gleave, architects, 18, Low Pavement, Nottingham:—

G. Hopewell & Sons, Nottingham* £4,490

[Lowest of seven tenders.]

GREENWICH.—For paving, etc., Cedar-grove and Ordnance-road, for the Borough Council:—

Cedar-grove.

Fry Bros.	£894 1 7
J. Mowlem & Co., Ltd.	875 0 0
J. E. Etheridge, of 8A, Rollins-street, Old Kent-road, S.E.*	866 7 0

Ordnance-road.

Fry Bros.	£1,051 19 4
J. E. Etheridge	960 0 0
J. Mowlem & Co., Ltd.*	924 0 0

HASLEMERE.—For the erection of a club, for the Conservative Association at Haslemere. Mr. J. H. Howard, architect and surveyor, The Cottage, Lower-street, Haslemere:—

R. Smith	£1,050	C. Doughton	£930
Chapman, Lowry, & Puttick	1,000	The Haslemere Builders, Ltd.‡	850
N. Holden	936		

[All of Haslemere.]

‡ Recommended for acceptance.

HEREFORD.—For alterations and additions to Nos. 40 and 41, Commercial-road, Hereford, for Mrs. H. Haunt. Mr. Herbert Skyrme, architect, 138, Widemarsh-street, Hereford:—

J. Evan Davies	£216	W. P. Lewis & Co.	£190
		T. Hiles	157

[All of Hereford.]

KIDWELLY.—For alterations and additions to Morfa Calvinistic Methodist Chapel for the Trustees. Messrs. W. Jones & W. D. Morgan, architects, Pentre, Rhondda-Valley:—

D. & T. Stephens	£2,379 6 8	J. Williams	£1,997 13 0
E. Thomas & Sons	2,138 0 0	Bennett Bros.	1,980 0 0
D. Evans & Williams	2,043 2 6	G. Mercer	1 958 0 0
H. Thomas & Son	2,037 16 6	M. Williams	1,848 18 11
Thomas & Jones	2,000 0 0	J. Morgan	1,846 0 0
Brown, Thomas & John	1,999 17 6	D. Davies & Sons	1,839 0 0
		B. Howell & Son, Ltd., Llanelly*	1,765 0 0

KILKEE (Co. Clare).—For earthen embankments, pipe lines, etc., for waterworks, for Kilrush Rural District Council. Mr. J. R. Griffin, architect, Liscrona, Kilkee:—

Martin & Co., Riverstown, Co. Cork* £2385 4 6

[Nine other firms competed.]

LEATHERHEAD.—For cleaning and painting works at the Park Fever Hospital, Hither Green, for the Metropolitan Asylums Board. Mr. W. T. Hatch Engineer-in-chief.—

W. Hussey	£447	D. T. Bostel & Sons	£297
J. S. Fenn	432	H. Kent	287
F. Miskin, Ltd.	420	F. Kinnaird, 2, St. Ann's-road, Brixton, S.W.*	223
J. Johnson	385		
E. Proctor & Son	348		
Sabey & Son, Ltd.	313		

LICHFIELD.—For alterations to house in the Corporation-yard, Stowe-street, for the City Council. Mr. W. B. Chancellor, City Surveyor:—

H. Smith & Sons, Stowe-street, Lichfield*.. £231 10

LLANLLYFNI.—For erecting a minister's house for Salem (C.M.) Chapel. Messrs. Richard Davies & Son, architect, Bangor:—

		With reductions.
H. Morris*	£690 0	£580 0
E. Jones & Son	780 0	
R. & J. Williams	753 0	
O. T. Williams	721 0	
O. Roberts	680 10	611 12
D. J. Pierce	673 0	626 0
T. Griffiths	665 0	620 10

LONDON.—For painting, colouring, and cleaning work proposed to be done for the Managers of the Kensington and Chelsea School District, at their Branch School, 253, King-street, Hammersmith, W.:—

Chadlegh Bros., of Shepherd's Bush-road, W.* £152

LONDON.—For cleaning and painting at the Brook Fever Hospital, Shooter's-hill, Woolwich, for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief:—

E. Proctor & Son	£499 0	J. S. Fenn	£327 18
E. Mills	486 0	S. T. Wright & Co., 150, Brixton-hill, S.W.*	255 0
W. Martin	415 0		
Sabey & Son, Ltd.	402 0		

LONDON.—For the erection of detached house, Stormont-road, Highgate. Mr. Edgar H. Selby, architect, 8, Buckingham-street, Adelphi, W.C.:—

Mattock & Parsons* £1,090

LONDON.—For pulling down and rebuilding 39, Great Windmill-street. Mr. Edgar H. Selby, architect, 8, Buckingham-street, Adelphi, W.C. Quantities by Messrs. Corderoy & Corderoy, 21, Queen Anne's Gate, Westminster, S.W.:—

Patman & Fotheringham	£1,783	Colley & Sons	£1,563
Higgs & Hill	1,744	Rice & Sons	1,549
W. E. Lea	1,625	Southern Building Co.	1,545
Chessum & Sons	1,623	Sheffield Bros.	1,535
J. Greenwood, Ltd.	1,594	Mattock & Parsons*	1,525
F. & H. F. Higgs	1,579		

MELTON MOWBRAY.—For asphalting and repairing footpaths, for the Rural District Council. Mr. J. Cobley, Surveyor, Nottingham-road, Melton:—

T. G. Cobley, Melton Mowbray, 1s. 6d. per yard new work; 1s. per yard topping; 2d. per yard dressing.

MORLEY.—Accepted for alterations and extensions to Peel Mills, for Messrs. W. & E. Jackson. Messrs. T. A. Buttery & S. B. Birds, architects, Queen-street, Morley, and Leeds:—

Mason and Joiner: H. Spensley, Morley	£1,270	0 0
Plumber: T. Cappell, Morley	138	0 0
Plasterer: E. Wilson, Morley	130	0 0
Slater: G. Rogerson, Morley	88	0 0
Ironfounders: Morley Engineering and Pulley Co.	401	10 1

NORWOOD.—For painting and repairs at Norwood Schools, for Lambeth Guardians. Messrs. Wood ward & Brooks, surveyors, 69, Kennington-oval, S.E.:—

Loasby & Salmon, 224, Hither Green-lane, Lewisham, S.E. £138 10

PEMBREY.—For general repairs, village council school. Mr. W. D. Jenkins, F.S.I., County Education Architect, Carmarthen:—

D. Williams	£185 19	D. Davies, Ffairfach, Llandilo*	£175
J. Wales & Co.	182 0		
J. Lewis	179 1		

PENZANCE.—For laying-out and making up the main and back roads on the Richmond building estate, for the Richmond Building Syndicate. Mr. H. Maddern, architect, 13, Clarence-street, Penzance:—

J. S. Tregenza	£1,000 0 0	J. Burnett & Son, 9, Penare-terrace, Penzance*	£775 12 9
J. Runnalls	942 10 0		
E. Pidwell	865 10 0		

SCURGILL, ST. JOHN (Cumberland).—For constructing 1,200 yds. of stoneware sewers at Scurgill, St John, Beckermet, for the Whitehaven Rural District Council. Mr. G. Boyd, Surveyor, 33, Queen-street, Whitehaven:—

J. Dawson, Whitehaven* £598

SHEFFIELD.—For water storage reservoir, valves, screens, etc., (Contract No. 41, Neepsend Power Station) for the Electric Light Committee. Quantities by Mr. S. E. Fedden:—

Yorkshire Hennebique Contracting Co. §	£4,918 0 0
Wellerman Bros ‡	4,686 14 0
J. Bentley ‡	4,619 0 0
J. Fidler Ltd ‡	4,596 18 0
H. Ashley‡	4,314 0 0
W. Cunliffe ‡	4,221 12 2
J. Eshelby & Son ‡	4,186 10 2
W. Craig ‡	4,167 17 7
T. Wilkinson & Son ‡	3,879 10 0
E. Taylor, Blackpool *	3,538 13 0

§ This firm have included their own special material and the tender is not comparable with the others.
‡ Add £130 for work omitted from quantities.

SURBITON.—For the construction of two public conveniences, at the Victoria recreation ground in the Balaclava-road, for the Urban District Council. Mr. H. T. Mather, Surveyor, Council Offices, Surbiton:—

Hyde & Co.	£264 0 0	A. E. Haines	£185 15 9
J. Twiner	252 2 0	Limpas & Son, Surbiton*	228 0 0
McDonald Bros.	245 0 0		
W. H. Farley	239 10 0		

SUTTON-ON-SEA.—For bungalow. Messrs. A. R. Calvert & William R. Gleave, architects, 18, Low Pavement, Nottingham:—

G. Hopewell & Sons, Nottingham* £881

WALTHAM HOLY CROSS.—For 400 ft. of wrought-iron fencing for the Urban District Council. Mr. W. T. Streather, Surveyor, Town Hall, Waltham Abbey. Quantities by Surveyor:—

H. J. Saville, Waltham Abbey. 8s. ½d. per yd., fixed.

WATFORD.—For repairs to roads at Leavesden Asylum, for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief:—

C. Ford	£1,552	Bracey & Clark, 129, Leavesden-road, Watford*	£800
G. Wiggs	1,362		
T. Wood & Sons	840		

WOKINGHAM.—For the brick abutments, etc., in connexion with the erection of a new bridge over the Emm brook, Barkham-road, for the Corporation and the Rural District Council. Mr. C. W. Marks, Borough Engineer and Surveyor, Town Hall, Wokingham:—

D. Lee	£950 0 0	F. G. Foster	£774 0 0
J. Ellis	864 13 0	T. Stimson	739 11 11
H. Hill	849 8 0	E. Lewis	712 10 0
Batten Bros.	825 0 0	G. H. Tucker, Reading‡	638 18 6
S. Redhouse	822 17 9		
W. A. Allen	800 0 0		

‡ Recommended for acceptance.

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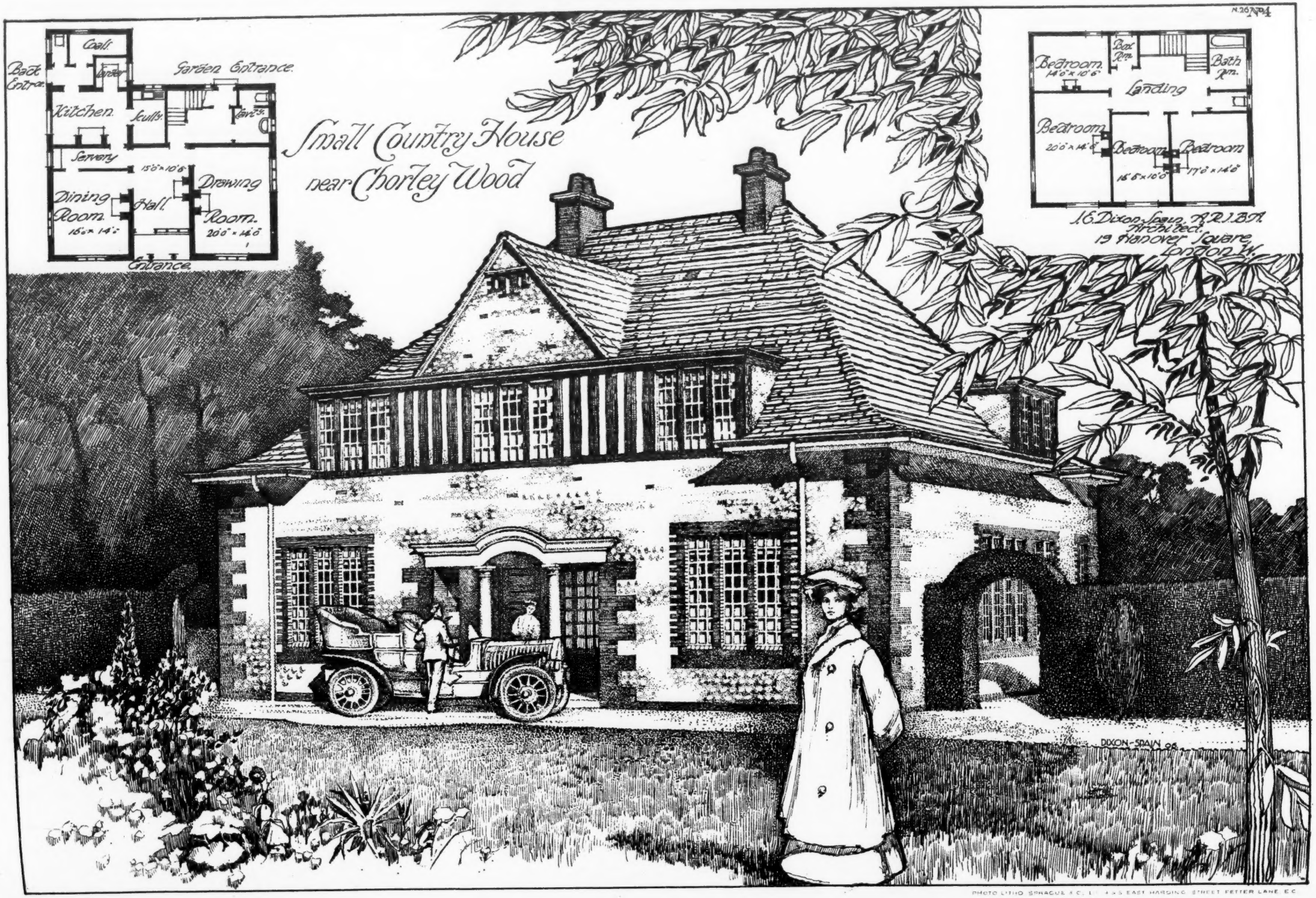

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E. J. MAY, ARCHITECT

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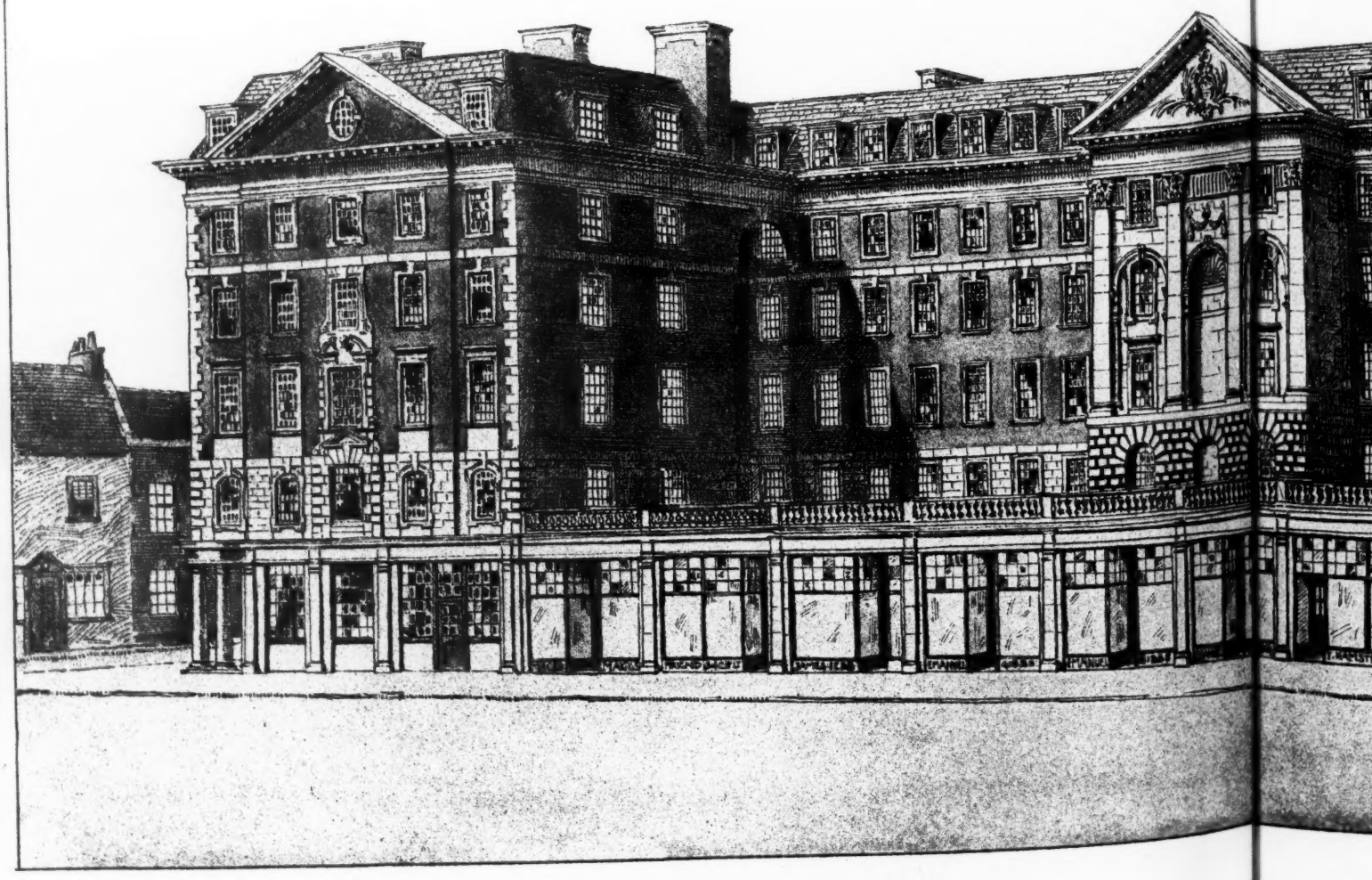

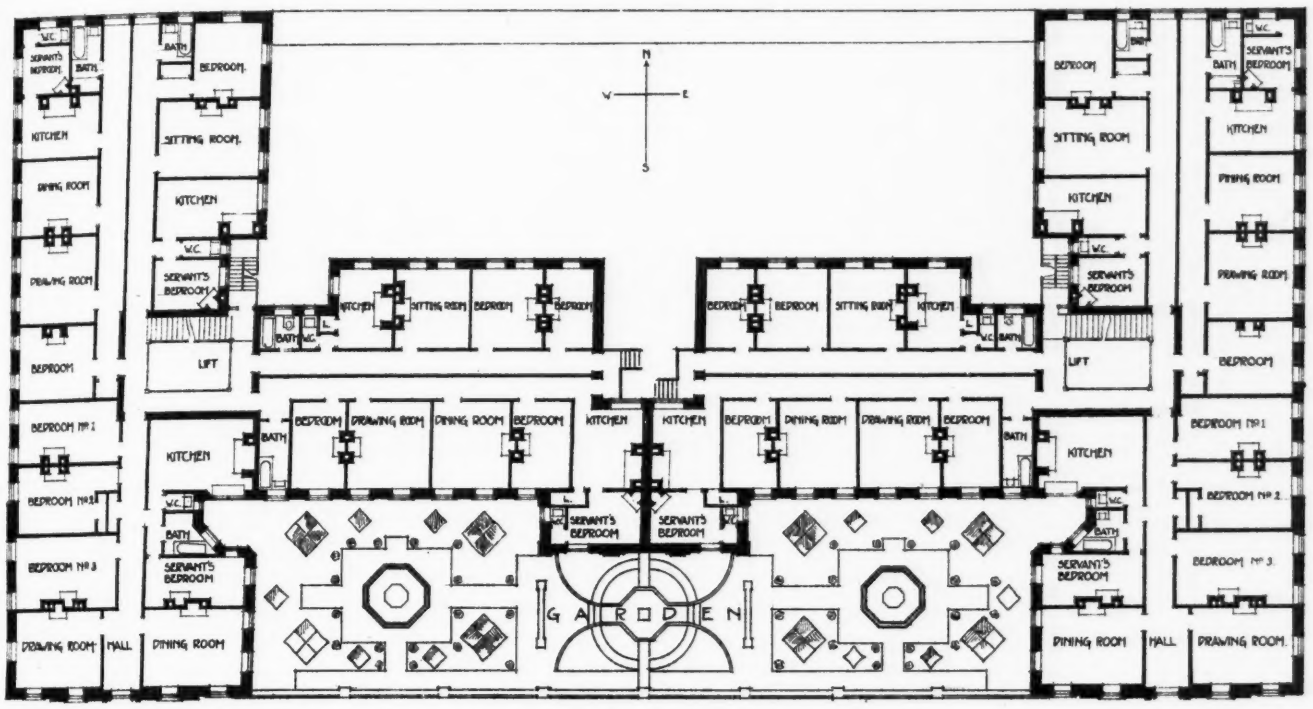

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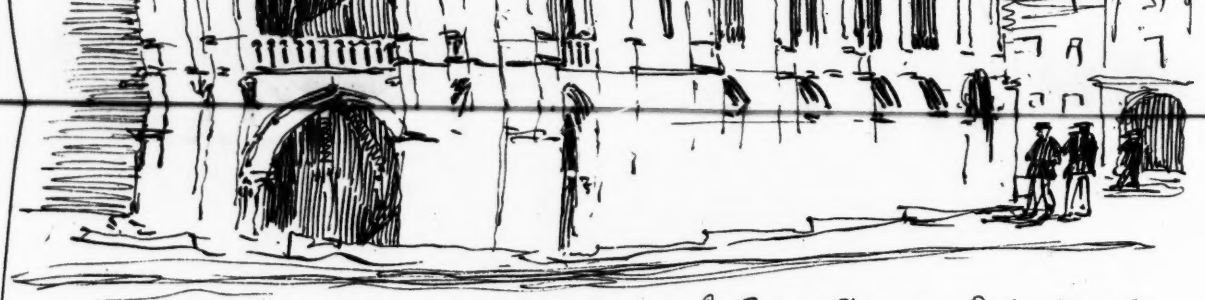

J. William Hepburn.

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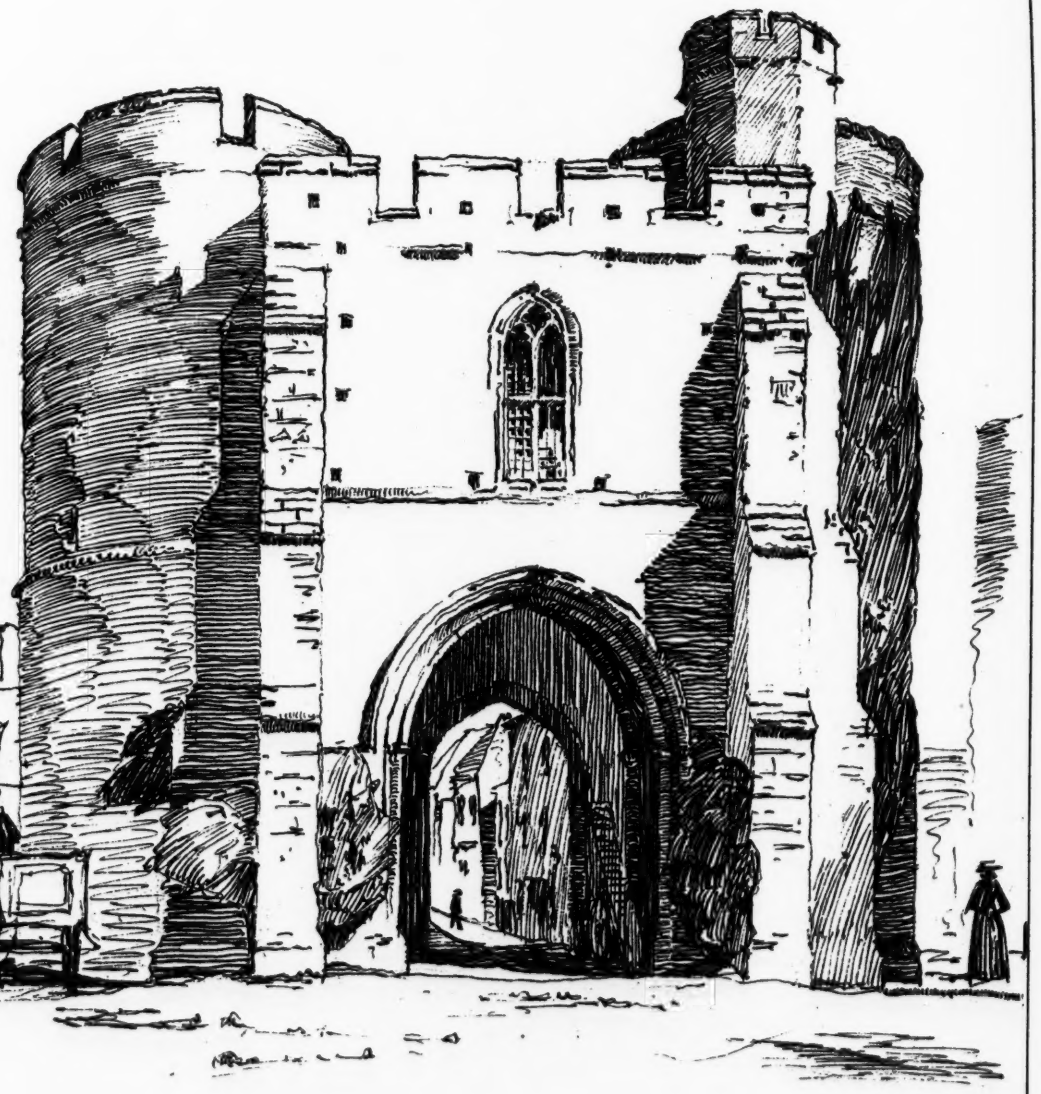
NORMAN PORCH -
CANTERBURY.



WEST GATE - CANTERBURY.

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SKETCHES: By Mr. J. W. Hepburn.

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